THE RUBBER AGE AND TIRE NEWS

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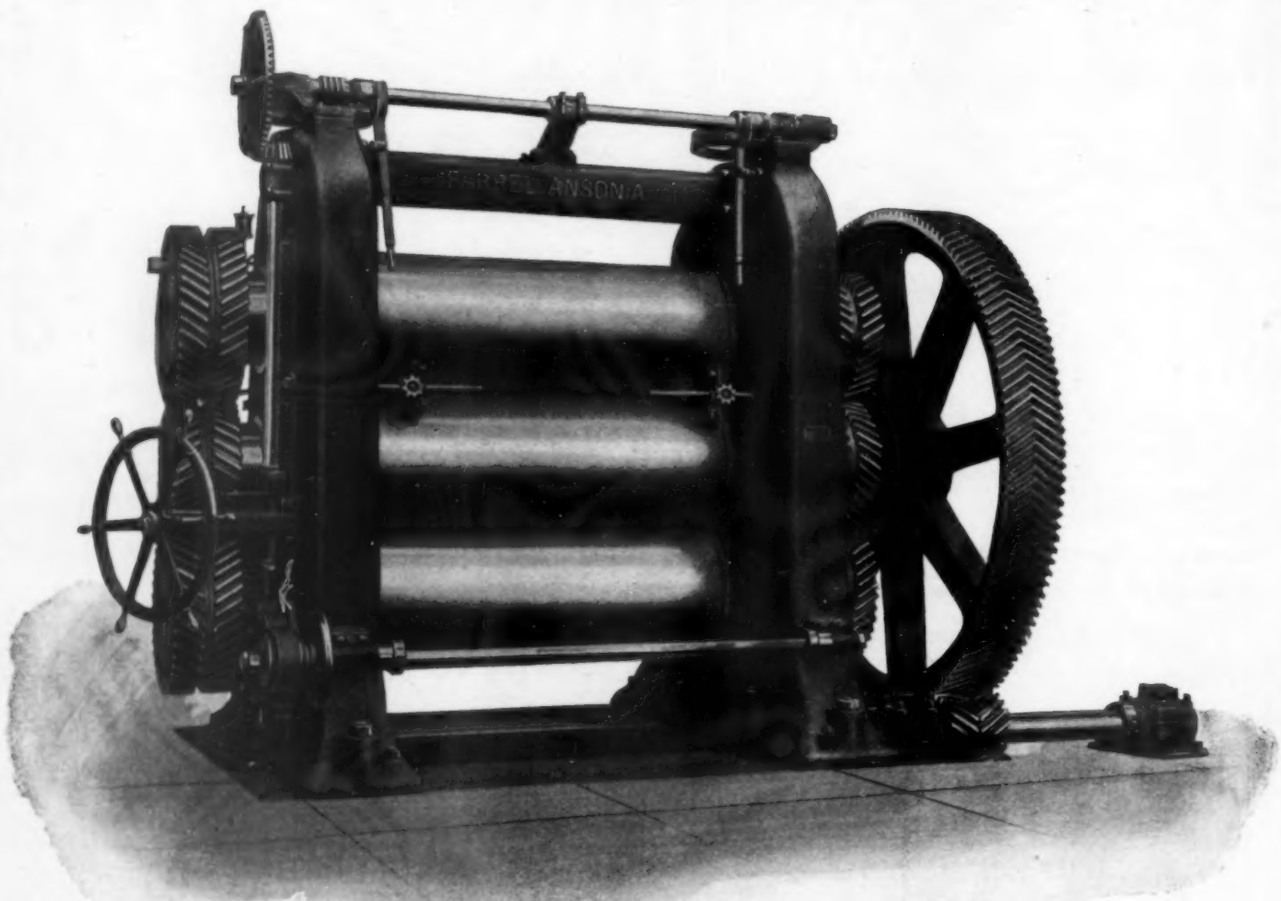

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THE RUBBER AGE AND TIRE NEWS

The Labor Factor in Production—IV

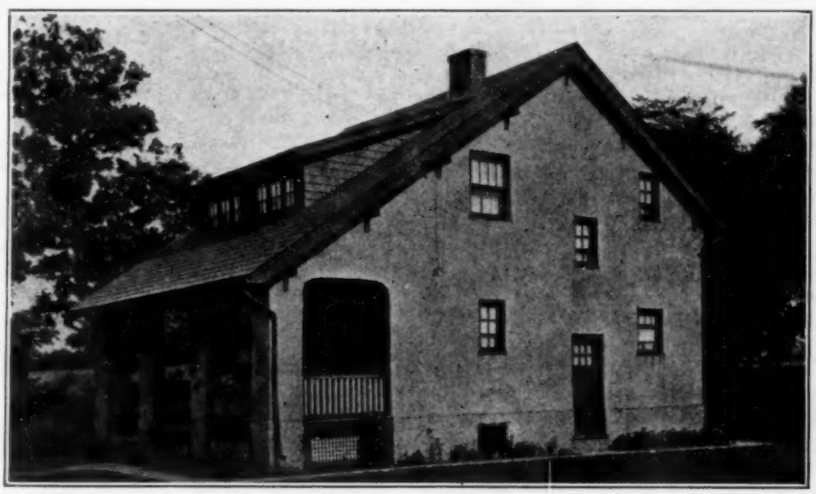
By J. C. Long

This is the fourth of a series of articles on the questions which confront the employment managers. The first of the series dealt with the organization of the department and the housing was partly discussed in the last issue. This article discusses housing problems as they have been met by particular factories. The subjects of running the factory restaurant, conducting a dental clinic and other phases of industrial relations work will be discussed in the near future.

Factories in the Rubber Industry afford interesting examples of how a plant may handle the housing problem in a comprehensive fashion. Goodrich, Firestone, and Goodyear have studied the matter of housing the industrial population of Akron, Ohio, and developed some enlightening results.

Goodrich

The experience of the Goodrich Company will be particularly useful to factories which have not the means or the desire to embark on the proposition of building a real estate park, or financing a subordinate company to do so. Goodrich neither owns houses, nor directly controls the financial arrangements of any of the homes where its workers live, with the exception of dormitories for women. Nevertheless the company operates a housing bureau in connection with its labor department which has given satisfaction in providing for the needs of its employes. This bureau has listed rooms, light housekeeping suites, and houses which are suitable for its workers. Complete records are kept on each address following the report of investigators regarding neighborhood, condition of quarters, character of house owner and rent asked. The wants of the employe are in the files, and he or she is referred to suitable quarters through the medium of the records mentioned above. The employe is given an introduction card to be presented to the house-owner and a card to be mailed to the housing bureau when he has taken up quarters.



Six-Room Stucco Cottage at Goodyear Heights

In the majority of cases, the company is able to suit the employe's needs and the house-owner's wants in a short time. This is made possible by the thoroughness and completeness of the preliminary investigations and interviews. The housing bureau is in position to handle all requests made upon it, no matter how great or small. At the present time it is handling approximately 300 cases a month.

It is notable in this connection that the housing bureau carries only such houses as come up to the standard set by the bureau. Complaints reported by employes are investigated with the object of recommending changes to the house-owner. In case such recommendation is not followed that particular house is removed from the list.

The question of housing female employes is handled largely by dormitories which are under the direct control of the Company and are superintended by a woman experienced in the handling of woman labor problems. The dormitories are at all times under inspection and necessary changes are made from time to time to maintain proper living conditions.

Where the employes are living in quarters not under the supervision of the housing bureau, control is exercised through the reports of the

visiting nurses of the health department. These reports come only in cases where the employe has been reported sick, but this method of control has nevertheless been found satisfactory for the needs of the situation.

Goodyear Heights

Goodyear Heights is one of the largest and best developed residential parks for factory workers to be found in the United States. It provides 300 homes for a population of approximately 1500, and is being constantly developed. The company has purchased 400 acres of land, all of which will probably be used eventually for housing purposes, and 100 acres of this ground have already been developed at a cost of over $200 for merely laying out the property. This plot of 100 acres has been laid out into 430 lots and land has also been set aside for parks. The houses which are built on the individual lots are sold at cost, varying from $2000 to $4000. The average lot is 50 ft. wide and from 110 to 125 ft. deep. The lots range in price from $240 up. The houses have fireproof exteriors and are built with modern improvements. Concrete sidewalks are built along the streets and 3200 trees and shrubs have been planted in this residential park.

The terms of payment are easy. Two mortgages may be placed on the property. Payments may be made in semi-monthly installments covering a period not to exceed fifteen years. For the first five years the payments are made on the basis of the real estate value of the property, namely 25 per cent plus the actual cost. After that time, if the worker is still in the employ of the Company, the difference between the two values and the interest thereon is cancelled.

Firestone

No less remarkable development in the housing line is Firestone Park. This residential park already includes 500 homes, more than one-half of which are already occupied and over three-fifths of which are sold. The method of payment is handled so that the worker can secure a home by a small first installment, and moderate monthly installments thereafter. The grounds are near the Firestone factory, thus saving the employes carfares, going to and from business. One church has already been built in the park and others are expecting to locate there. One part of the park is set aside for business purposes and the remainder of the section is restricted to homes only. The houses here are being sold at cost as in Goodyear Heights—and as a matter of fact, the price is much less than the houses could be bought for now, as it is based on the cost in 1916 when the Park was first developed. Care was taken at the beginning of this development to make it a home-like section and not simply a row of barracks. Alling De Forest of Rochester, N. Y., a landscape architect, laid out the Park and provided a design which is equal in beauty to many more expensive suburban communities.

The houses have modern equipment, including large closets, enameled and tiled bathrooms, full length mirrors in bedroom closet doors, clothes chutes to cemented cellars, electric fixtures, hardwood floors, gas fireplaces, hot water heaters and furnaces.

One point in which the two residential parks discussed above differ from the Massachusetts project which was outlined in the preceding article is that in the latter case the costs included a reasonable profit. The Lowell experiment was designed to show that a realty company could build decent low-priced homes at a fair profit, whereas the Goodyear and Firestone undertakings were developed for the purpose of attaching the workers to the particular factory. The companies in this case could afford to sell the houses without profit as they would gain by reducing the labor turnover.

Costs in Different Communities

Building costs naturally vary in different parts of the country and several examples of industrial homes taken from different States will be referred to here so that the factory owner may have some idea of what it would cost him to build in his own community. Many of these developments were undertaken from two to five years ago, and the prices today would therefore be higher. The best cost comparison which can be made on this subject may be had by reference to the Lowell experiment in the preceding article on housing as these houses were built within the past few months and represent war time prices.

Kenosha, Wisconsin, Houses

The Kenosha Homes Company in 1916 built a number of single family attached houses costing between $1700 and $1800. One representative type is a six and one-half room house costing $1725 and having a cellar with cement blocked walls, wood frame, with stucco covering for first floor, shingles for walls above and for roof surfaces. The rooms are finished in plaster with wood floors and double hung windows.

At Danielson, Conn., a local company has erected several detached houses costing $1900. These are about 25 ft. square with four rooms on each floor, and porch, attic and cellar. There is hot water in kitchen and bathroom, open plumbing in the bathroom, and electric lights throughout. Floors and wood trimmings are of Georgia pine with inside walls oil painted in warm tints. The exteriors vary both in style and material, employing shingles, trap boarding and stucco.

The American Rolling Mill Company, Middletown, Ohio, built a number of semi-detached cottages in 1914 which cost $1922 per family. These semi-detached cottages have for each family four rooms comprising a kitchen, a large living room, 22 by 13⅓ ft., and two bedrooms. Each dwelling is lighted by electric light and heated by the kitchen stove. Only plumbing fixture inside is kitchen sink. Midland Park, Pa., has a few examples of the poured concrete house invented by Edison. The first cost of a house of this structure is considerable, but as the same mold can be used over and over again the cost becomes smaller in proportion to the number of houses built. The cast iron mould costs about $25,000 for each design. The Midland houses are being sold for $1900 with lot or rented for $14 a month. They have concrete walls and floors throughout and comprise four rooms with modern plumbing, running water, electricity and gas.

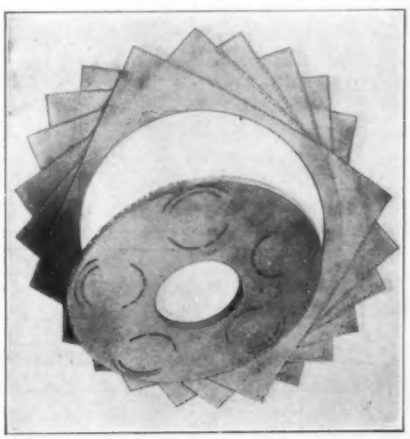
Massachusetts has developed a number of communities where detached houses are provided at comparatively low cost. One example where this has been done is in the Billerica Garden suburb, at North Billerica. A typical house in this suburb which was built at a cost of $1800 in 1916, is a semi-bungalow, 25 by 28 ft. with piazza 20 by 7 ft. containing six rooms and bath. For the annual report of the Homestead Commission of the Commonwealth of Massachusetts the structure is described as follows:

"The building is of frame structure, triple studding at the corners and double studding at all openings. The sides are covered with matched boards, a layer of good building paper, cypress flat boards. The roof is also boarded and covered with asphalt shingles with slate surface laid 4½ in. to the weather. The inside is finished in North Carolina pine with hard pine flooring of good grade. Cypress five-panel doors, front door of the craftsman type of quartered oak—outside painted with three coats of lead and oil and inside finished with two coats of shellac and one of spar of varnish—kitchen and bathroom have three coats of good wall paint."

Flexible Fabric Universal Joints

In a paper read recently before the Indiana Section of the S. A. E., C. A. Schell, chief engineer of the Thermoid Rubber Co., Trenton, N. J., presented some interesting facts on the development of the flexible fabric universal joint. Mr. Schell's paper was in part as follows:

The development of a new product in any industry is generally a gradual evolution from the crude to the highly refined, rather than an abrupt change from one fixed or proved construction to another. This has been so in the refinement of the flexible type of universal-joint and in its introduction to gasoline engine manufacturers, but considering that it has been in practical use in America for only about four years the promulgators of this construction have every reason to feel hopeful. At the present time there are over thirty-five truck and passenger car manufacturers who are using this joint as standard equipment, sixteen of whom use it on the propeller-shaft. All of these installations are giving good service, and their users are enthusiastic about them. Recent converts to this type of construction are the Studebaker Corporation, which uses it on all their models, and the Government, on the Class AA military truck; both use it between engine and transmission case. The Reo Company, which has used this type of coupling between engine and transmission case successfully for

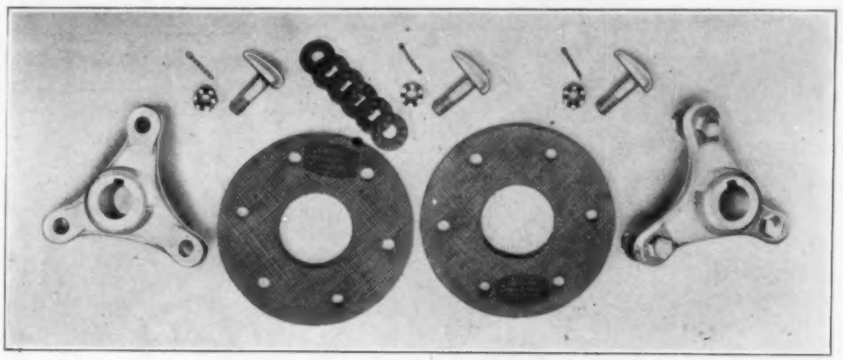


Method of Building Up a Six-Ply Disk

over four years, has finally adopted it on the axle end of the propeller-shaft. The forward installation was so successful, and was found to have so many advantages over the metal type of joint that it was finally adopted in the rear. The rear propeller-shaft joint generally gives the most trouble, being exposed to much dust and mud, and difficult to lubricate.

"Some of the engineers who first experimented obtained discouraging results, in most cases owing to lack of knowledge of the fabrics and friction material required in the construction of the disks, and very often to lack of care and thought in the design of the metal parts. Some of the pioneer manufacturers of the disks are now building them very efficiently, and the design of metal parts is being gradually improved. In some of the first tests conducted it was soon learned that disks made of any ordinary grade of cotton and cheap friction material would not suffice. This type hardened very quickly under severe conditions, and failed just as a tire made very cheaply fails. Very good fabric must be used, and must be placed or woven correctly, the best grade of friction material employed, and the cure must be accurate in order to obtain a strong, elastic, and long-lived disk.

In building our first disks we tried several methods of weaving and of placing the plies of fabric relatively so as to obtain maximum results. We secured very good results from disks woven in six directions, or sectors, the cotton strands running completely around the disk, and equally good results from disks made up by the Hardy method. The first method proved very expensive, and meant the installation of intricate machinery. We also tried building up the disks by the straight method, or by laying one ply upon the next, with no attention to the direction of the weave, but the results were very discouraging. With this method we got uneven strength and stretching in the different sectors, even though in static tests they were as strong as the Hardy type. When on the road, the sector which happened to be in such relation to a set of bolt holes as to take the greatest part of the load failed very quickly. This is true because cotton is stronger when pulled in certain directions and stretches most when pulled on the bias; naturally, with a three-arm type of spider the disk will not offer uniform resistance to the torque and an overload will always be thrown on one sector.



Component Parts of a Flexible Fabric Universal Joint

Construction of Hardy Disk

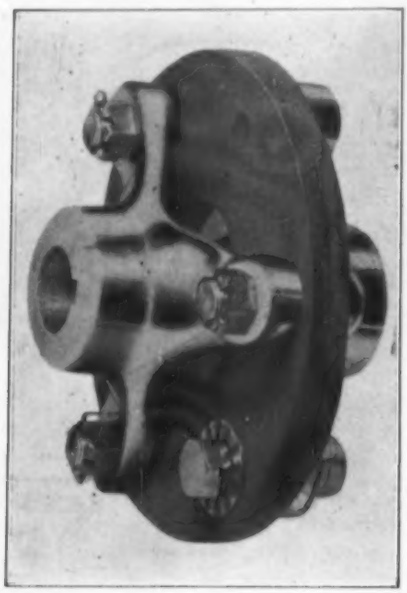
We finally adopted the Hardy disk, which is made by twisting the plies in consecutive fashion so that the disk is uniform in strength and stretch from any one portion to another, and when made of a good fabric has a tensile strength of 3,000 lbs. per sq. in. The Hardy disk has been used in England for several years prior to our experience with it, and is being used on several of the chassis over there at the present time. Of course, disks of other constructions can and are being used, but in starting out we aimed to get the greatest strength and longevity that could be obtained in a given space.

We also aimed to get considerable elasticity in order to benefit all the chassis parts as much as possible, as the cushioning effect of elastic disks adds greatly to the life of the shafting, bearings, gears, transmission, clutch and even the engine.

After experimenting considerably with disks we went thoroughly into the metal parts of the point and are conducting interesting tests at the present time. In testing some of the first assemblies that had given any trouble, we found that it was often due to the lack of care in designing the metal parts, and we have seen excellent disks fail owing solely to the use of poor friction washers. Most of the first washers were made too thin and allowed the fabric to pull out under the surface, throwing the load onto the bolt holes until failure took place. The washers should be made thick enough to resist cupping and should be fluted or knurled like a clutch-pedal in order to grip the fabric snugly and drive by friction.

It is also good practice to groove or knurl the driving side of the spider bosses.

It must be remembered that the disks are comparatively soft, and that the volume or section held tightly under the washer face is depended upon to do the work; a disk made of the most expensive materials will fail, unless efficient washers are used.



UNIVERSAL JOINT WITH TWO FABRIC DISKS

Life of Flexible Fabric Joints

We have installations on the road which have run over 60,000 miles over a period of four years, and look good for some time to come. These consist of well-made disks of good fabric and well-designed metal parts, and we are satisfied that a well-balanced assembly will last as long as most present-day chassis. Even should it become necessary to install a new set of disks once during the life of the vehicle, the benefit derived by the rest of the chassis in the meantime is worth many times this expenditure. I believe the saving created by the use of a flexible coupling in the transmission line is not fully appreciated.

At the present time the Thermoid Rubber Co. is conducting some laboratory work which will be of interest to the engineer. We have two well-known chassis, and with the use of special apparatus will attempt to show the failure points of certain parts under severe shock with and without the installation of flexible disks in the transmission line. This is a difficult task and will require time to be put in conclusive form, but from present observation we are sure the results will be almost astounding. The greatest benefit is obtained on trucks with solid tires, when chains are employed. It is not uncommon to see a truck with two or three pieces of chain wrapped around the rear wheel started with an unmerciful jerk by a rough driver, and in such cases a small shock absorber somewhere in the drive is an advantage. In a case like this a good disk-joint will allow about 5 deg. wind, which means a considerable time element.

Construction Material

The material used in the construction of the disks is made of selected cotton duck and high grade rubber. The duck is made of three grades of cotton, Sea Island, Egyptian, and the best grade of American cotton called combed Peeler.

The diameter of the disk is generally in direct proportion to the power transmitted and we have been getting just as good results with 7½-in. or 8-in. disks as we have with the smaller ones. Of course the lateral slip and angle must not be neglected in designing a joint. Many of those who experience this trouble do not pay very strict attention to machining the parts accurately. This is as essential as in machining a metal joint. Some of the first assemblies were equipped with disks which were too flexible and were built with too large a center hole which made the disk too weak to overcome the centrifugal action due to working on an angle.

"Accelemal," a New Catalyzer

A new organic catalyzer, called "Accelemal" has been placed on the market by the L. H. Butcher Co., 100 William Street, New York City, after exhaustive tests which have shown that, beside materially shortening the "cure," it improves the tensile strength of the product without impairing its ageing qualities.

It contains no free sulphur; it must, therefore, be used in conjunction with sulphur, and the manufacturers do not recommend its use in compounds together with a material like litharge.

No set rule can be given for the use of "Accelemal," except that to obtain the best results the rubber should be broken down and thoroughly mixed with the accelerator. Then the mill should be cooled while sulphur and other ingredients are added. It is said to be advisable to use 4 per cent of "Accelemal" based on crude rubber and about 2 per cent on shoddy content of compound.

If the compound "bloom" objectionably this can readily be overcome by slightly lowering the percentage of sulphur.

For Tire Repair Stock

"Accelemal" will be found very interesting for tire repair work where there is a big demand for compounds that will cure in from fifteen to twenty minutes.

The L. H. Butcher Co. submits the following compounds, which are self-explained and of interest to the trade:

TIRE REPAIR STOCK

	Pounds.
Any good tread compound	10
Accelemal	½
Sulphur	1
Total	11½

WHITE TREAD STOCK

	Pounds.
Ceylon smoked sheet	35
White auto tire shoddy	10
Zinc oxide	51½
Sulphur	2½
Accelemal	1
Total	100

Cure 1 hour at 40 pounds pressure.

BLACK TREAD STOCK

	Pounds.
Ceylon smoked sheet	35
Auto tire shoddy	10
Zinc oxide	30
Gas black	6
Carbonate of magnesia	5
Light calcined magnesia	2
Mineral Rubber	5
Sulphur	2½
Accelemal	1
Total	96½

Cure 1 hour and 15 minutes at 40 pounds pressure.

COMMON TUBE REPAIR STOCK

	Pounds.
Any good common tube compound	10
Accelemal	½
Sulphur	1
Total	11½

Cure in 20 minutes at 40 to 45 pounds pressure.

RED AUTO TUBE STOCK

	Pounds.
Ceylon smoked sheet	37½
Heavy calcined magnesia	4
Golden sulphuret of antimony	1
Accelemal	3
Total	45½

Cure 1 hour and 10 minutes at 40 to 45 pounds pressure.

GRAY AUTO TUBE STOCK

	Pounds.
Ceylon smoked sheet	72
Sulphur	4
Accelemal	2
Zinc oxide	22
Lamp-black to order	—
Total	100

Cure 1 hour and 15 minutes at 40 pounds pressure.

PURE GUM AUTO TUBE STOCK

	Pounds.
Ceylon smoked sheet	45
Sulphur	5½
Accelemal	3½
Total	54

Cure 1 hour and 45 minutes at 40 to 45 pounds pressure.

Technical Course in Rubber Manufacture

By H. E. Simmons, M.S.

Professor of Chemistry in the Municipal University of Akron

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SECTION XXII—Continued

Analysis of Manufactured Rubber

Having dealt in the last section with the organic portion in a sample of manufactured rubber, we shall now proceed with the inorganic part.

The first component to be considered is sulphur and it bears a very important part. We have pointed out the determination of the free sulphur as it was found in the acetone extract but in manufactured rubber we must also know the amount of combined sulphur. By this we mean the amount of sulphur in combination with the caoutchouc itself, for in addition to this we have sulphur in combination in the fillers used, as in the case of antimony, which is really only present in the form of the sulphides of antimony, and in the case of lead sulphide which is formed during vulcanization when litharge is used in the compound, in lithopone, as sulphur in zinc sulphide, and also here as the sulphate of barium. Sublimed lead also has sulphur in the form of lead sulphate. Then again we have the sulphur which exists in factice or rubber substitutes, and a little in mineral rubbers. These represent some of the places in which we may expect to find sulphur.

With these facts in mind we proceed to determine the coefficient of vulcanization or degree of vulcanization. To obtain this knowledge, we must determine the total combined sulphur in the sample which we will represent by x; the total sulphur which is in combination with inorganic substances which we will designate as y; then the expression $(x\text{-}y)$ will equal the amount of sulphur in combination with the rubber proper.

The formula then which represents the degree of vulcanization is represented thus $V = \frac{100\ (x\text{-}y)}{z}$ where V = Degree of vulcanization, Z = Amount of caoutchouc, which is generally determined by difference. This as was pointed out before is liable to an error of several per cent. In this connection we are carrying on some experiments which we hope will lead to a more accurate method of determining the hydrocarbon itself.

To determine the x, or the totally combined sulphur, it is necessary to use a sample which has been subjected to all of the extractions. The acetone removing the free sulphur, the carbon bisulphide removing a small amount of sulphur as it occurs in the mineral rubbers, and the alcoholic potash as it removes the sulphur found in factice.

For this assay many methods have been suggested but we shall outline only a few of these.

First a weighed amount of the rubber is placed on the crucible and covered with a watch glass and some concentrated nitric acid is added. When the violent reaction is over the watch glass is removed, and the solution is evaporated to dryness over water bath. In case there are some rubber particles still remaining, the nitric acid treatment is repeated. To the contents of the crucible a fusion mixture of sodium carbonate and potassium nitrate is added and when thoroughly mixed is covered and very gradually heated. When the reaction takes place it gives off a considerable amount of energy and therefore the reaction may be rather violent. When this is over the temperature is raised and the whole mass brought to a quiet fusion and held there until it appears homogeneous. In some cases the fusion is poured out onto an iron plate and when cold is lixiviated with water along with what remains on the crucible. It will be necessary to filter this solution for it will have suspended in it the carbonates of the different metallic fillers used. The filtrate is acidified with hydrochloric acid and evaporated to dryness, taken up with a little hydrochloric acid and water and again filtered if necessary. The sulphate is then determined as outlined before.

In this test as in all others, blank tests should be run with the chemicals to make sure they are all free from sulphur.

Another Method

Another method which does not take a long time and gives good results is the following:

About fifteen grams of potassium hydroxide are placed in an iron or nickel dish with two c.c. of water and heated until it is dissolved, then a weighed amount of rubber which has been extracted is added and the heat is continued. A smoke will be given off and there will be a little sputtering which always comes when the mass is being stirred. The mass turns black, due to the charring of the rubber and now sodium peroxide is added in small portions until the whole mass comes into a quiet state of fusion and the carbon disappears. The contents of the dish are allowed to cool and then taken up in water and acidified with concentrated hydrochloric acid until the iron oxide, which comes from the action of the fusion upon the dish, has dissolved. If there remains a white precipitate that is probably barium sulphate and it may be filtered off and weighed thus getting the sulphur in it, and the filtrate is treated for sulphur in the usual manner; then the two are added together. Very often when barium sulphate is precipitated in the presence of iron salts there results considerable adsorption of the iron with the result that when the barium sulphate is ignited it is colored yellow or even reddish brown. In such a case the contents of the crucible are dissolved in concentrated sulphuric acid, with the aid of heating if necessary, and then the solution is poured into a beaker of water when the barium sulphate will reprecipitate, is filtered out and ignited again when it will be white.

The methods mentioned under free sulphur have been used here also—namely oxidizing with concentrated nitric acid aided either by potassium chlorate or bromine. But these methods are not applicable if an insoluble sulphate like barium is present. These are the methods used most.

The y in the above formula or the combined inorganic sulphur is determined as follows: A certain weighed amount of the residue obtained by dissolving away the rubber from the charge, as will be outlined below, is placed in an iron dish with about five grams of potassium hydroxide and then boiled down and oxidized with sodium peroxide as outlined above. The mass is dissolved in water, acidified with hydrochloric acid and the process is continued as outlined above. This will give the sulphur inorganically combined which taken from the totally combined sulphur gives the amount in union with the caoutchouc which multiplied by 100 and divided by the amount of caoutchouc gives the degree of vulcanization.

Analysis of Mineral Matter

When it comes to the analysis of the mineral matter which was put into the compound we have pointed out that the old incineration method is unreliable.

The best method today consists in placing from 0.5 to 1.0 gram of the rubber in a weighed centrifuge tube about five inches long and an inch in diameter. The rubber is then treated with from 10 to 15 c.c. of a distillate obtained from petroleum having a boiling point around 200 deg. C. or a little higher. The tube is fitted with an air condenser about two feet long and then heated in a paraffin bath so that the solvent just boils.

The length of time necessary to disintegrate the rubber varies considerably. Where the degree of vulcanization is low a few minutes of time will be sufficient, but, as the degree of vulcanization goes higher, the time required to effect solution is longer. As the rubber approaches ebonite, this method becomes impossible.

When the solution is complete it is allowed to cool, when the mineral matter will settle and the supernatent liquid is decanted. The mineral residue is then washed with light petroleum spirit and the tube placed in a centrifugal machine and centrifuged until the supernatent liquid is free from solid particles. In the majority of cases this requires from twenty to thirty minutes, and at the end of this time the mineral matter is a hard compact mass which allows the liquid to be poured or siphoned off without loss of residue. This washing is repeated several times and each time the residue must be broken up with a spatula to enable effective washing. The residue is then dried to constant weight and the per cent of mineral charge thus ascertained.

The reason that we use the centrifuge tubes from the beginning is that it saves transferring the solution which gives considerable chance for error.

From this point on we proceed almost as though we were carrying out an inorganic analysis. First, however, we must carefully inspect the mineral charge, for there may be in it fiber, lamp black, etc., and these along with other materials may be identified by an examination with a magnifying glass. Also before taking portions for analysis the whole residue must be carefully ground and mixed because the process of centrifuging has divided it into a more or less stratified condition, the heaviest fillers being thrown out first and the lightest ones last.

A weighed portion of the residue is now placed in a beaker or evaporating dish and treated with dilute hydrochloric acid. Note whether any CO_2 or H_2S is given off. The solution is evaporated to dryness over a water bath and the residue moistened with concentrated hydrochloric acid, again evaporated to dryness and then heated in an oven at 110 deg. C. for one hour. Moisten the residue again with hydrochloric acid, then add 200 c.c. of water and bring to boiling, then filter onto a tared paper. If there is a large amount of lead present, it may be necessary to boil up the residue with more distilled water, filtering and combining the filtrates. The residue is dried and weighed. It may contain barium sulphate silica, carbon and organic matter. The residue is then ignited and weighed. In the majority of cases, this ignition loss is a fairly good indication as to the amount of carbon present unless the silica runs high, as determined later, in which case part of the loss is due to water.

The residue is now placed in a platinum dish, if it was not ignited in one, moistened with hydrofluoric acid and a drop of sulphuric acid added, then evaporated to dryness over a water bath and ignited, then weighed. The loss in weight here, of course, represents the silica, and the residue the barium sulphate. In some cases this residue is colored reddish brown due to the presence of iron but may be eliminated as pointed out above. Sometimes the residue is fused with an alkaline fusion mixture and this, analyzed in the usual manner. Thus the barytes and siliceous materials are determined.

The filtrate from the acid-insoluble is acid with hydrochloric acid and as fas as rubber fillers are concerned when hydrogen sulphide is conducted into this solution we expect to see either a black sulphide of lead form, or an orange one of antimony. Our idea as to which one is pretty well fixed also for if the original sample was gray or black we expect lead, while we expect to see the antimony if the stock was red. Of course there are times when the above reasoning does not hold.

The hydrogen sulphide precipitate is dissolved in nitric acid, then a little sulphuric acid is added and the solution evaporated until the fumes of sulphuric acid appear. The solution is then cooled, 75 c.c. of water added, and 25 c.c. of alcohol added, and allowed to stand an hour when the lead sulphate may be filtered off, washed with water containing alcohol, ignited and weighed as lead sulphate.

Some volumetric methods for determination of lead are used.

The antimony sulphide is washed into a weighed crucible and nitric acid added, then evaporated to dryness over a water bath. Fuming nitric acid is then added, it is evaporated again, then gently heated and finally ignited and weighed as SbO_2.

If other sulphides beside antimony are thrown out of the acid solution by hydrogen sulphide, they may be separated by the use of sodium sulphide.

The filtrate from the sulphides is acid still with hydrochloric acid and also contains some hydrosulphuric acid, which during the hydrogen sulphide precipitation has also reduced the iron, if any is present, to the ferrous state. This filtrate must therefore be boiled to remove the hydrogen sulphide and nitric acid must also be added to oxidize back the iron. During this boiling there will be a separation of sulphur which must be filtered out. Some ammonium chloride is then added and the hot solution made alkaline with ammonium hydroxide. The precipitate which forms is composed of either the hydroxide of iron or that of aluminum, or perhaps both. A good idea of this is judged from its color.

The solution is filtered, ignited and weighed as Al_2O_3 or Fe_2O_3. When it is necessary to actually determine the amount of iron and aluminum, that is done in the usual manner by dissolving out the Al_2O_3 with sodium hydroxide. The filtrate from the iron groupe is alkaline with ammonium hydroxide and the zinc is next in order of assay. The sulphide is very difficult to filter on account of the length of time consumed. If the ammoniacal solution is warmed and hydrogen sulphide conducted into it, the zinc sulphide comes down in a form which filters comparatively easy for zinc. After the zinc sulphide is filtered out and washed it is dissolved off the filter paper with hydrochloric acid into a weighed crucible. The solution is then evaporated over a water bath, then freshly precipitated, mercuric oxide is added, carefully heated and then ignited to constant weight, thus giving the amount of zinc oxide.

The zinc is easily determined volumetrically by dissolving the zinc sulphide in dilute hydrochloric acid and titrating it with a solution of potassium ferrocyanide against a known zinc chloride solution, using uranyl nitrate as an external indicator. This gives very good results.

The calcium in the filtrate from the zinc is determined by adding ammonium oxalate to the hot solution. The calcium oxalate is filtered off, washed, ignited to constant weight and determined in a calcium oxide. The magnesium left after removing the calcium is precipitated in the cold solution by adding disodium hydrogen

phosphate and proceeding in the usual manner.

It is weighed as $Mg_2P_2O_7$ and then calculated to MgO. This constitutes the general procedure of analysis of a sample of manufactured rubber.

It will be well to outline a method for determining amorphous carbon or graphite as both are being used in large quantities today.

One or two grams of the original rubber is placed in an evaporating dish and covered with nitric acid, the dish being covered with a watch glass until the first reaction is over, then the solution is evaporated to dryness over a water bath. If any rubber remains the process is repeated. When the rubber has all disappeared, the residue is washed into a large beaker and boiled up with 400c.c. of water. The solution is then filtered through a tared filter, washed several times with hot water; then transferred to a beaker and boiled up with dilute ammonium hydroxide to which a small amount of ammonium chloride is added. The solution is again filtered through the original tared filter paper and washed with water. The residue is again transferred to a beaker and this time boiled up with dilute hydrochloric acid, filtered upon the tarred filter, washed and dried and weighed.

This residue may contain mineral matter which was insoluble in nitric acid, ammonium hydroxide and hydrochloric acid. For instance, barytes and silica will both withstand this treatment. So the residue is now ignited and the carbon burnt off. The weight of the residue taken from the weight left in the tared filter will give a very close approximation to the true amount of carbon used. The carbon in the residue may be determined accurately by placing the dried carbon residue in a combustion furnace and running a regular carbon combustion. This is seldom if ever necessary.

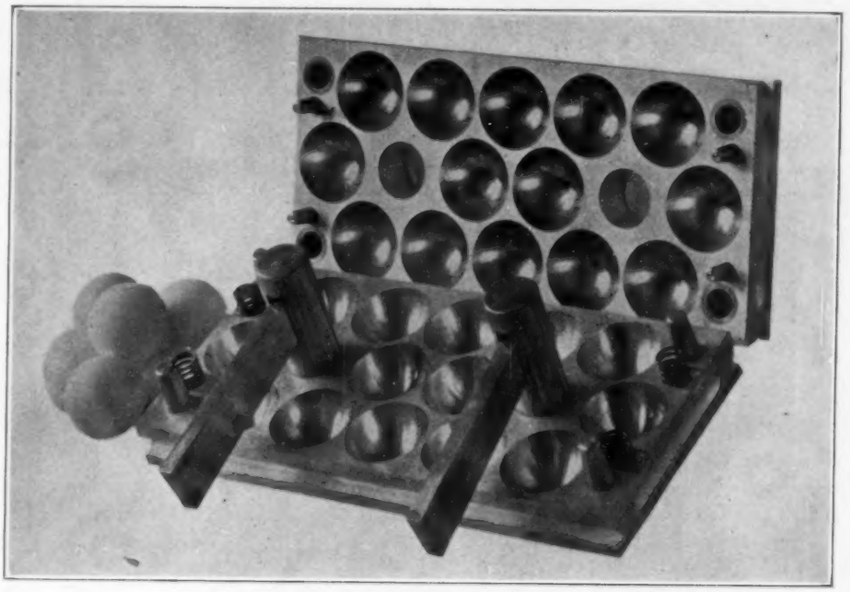
In these two sections we have given a brief outline of the analysis of manufactured rubber as it is usually carried out.

A Paralite Ball Mold

The accompanying photograph shows a rubber ball mold made of a new metal called Paralite, which is rapidly becoming popular in the rubber industry.

Paralite stock for rubber molds is marketed through Department A of the Paralite Co., 609 Swetland Building, Cleveland, Ohio, which states that this material is lighter than 99 per cent pure aluminum, with a tensile strength greater than that of cast iron.

Paralite is impervious to the action of all of the acids used in the manufacture of rubber, and tests have shown, it is said, that a pressure of 24,000 pounds per square inch will not distort nor in any way damage the cavities of a Paralite mold. The sharp edges of the metal are said to stand up indefinitely provided the mold is used for the purpose for which it is intended.



A Ball Mold Made of Paralite

The great thermal conductivity of Paralite materially shortens "heats" and the rubber peels freely from the cavities of the mold on account of the denseness of the molecular construction of the metal. It is further claimed that the extreme light weight of Paralite saves 50 per cent on labor.

Balloons for Wind Observation

According to Consul Frank W. Mahin, reporting from Amsterdam, Netherlands, the Royal Netherlands Meteorological Institute at De Bilt, near Utrecht, with branches elsewhere in Holland, until 1916 used for wind observations in the upper air small caoutchouc balloons which were obtained from France. Then information came from Paris that the manufacturer of these balloons could furnish no more. The institute was then reduced to the choice of ceasing the upper-air wind observations or having the balloons made in Holland.

Experiments began at once and continued more than a year, and now it is announced that they have been entirely successful. It is stated that the small and light rubber bags made in an automobile garage at Utrecht can, after undergoing a certain chemical process, be easily inflated into large balloons which are plainly visible in the air. Further, it is claimed, observations with these balloons can be made at a height as great as 15 kilometers (9.32 miles). As these balloons are pure white, and transparent as glass, they are said to form a peculiarly favorable image in the telescope—different from the former imported balloons, which had a golden tint in the air that detracted from long-distance visibility through the telescope.

Book Reviews

The New Competition. By Arthur Gerome Eddy. Published by A. C. McClurg & Co., Chicago, Ill. (8vo, 423 pages. Price $1.50.)

Cooperative or Open-Book Competition, also known as New Competition is a new form of competition to replace the old cut-throat variety. Its principles are being applied successfully in many lines of trade and it is a subject of real interest to all business men who should be familiar with it.

In Mr. Eddy's book no attempt is made to fit facts to a preconceived theory, or to stretch any theory to cover unrelated facts; it deals, first of all, with what is now going on, with facts; secondly, with the principles underlying actual conditions; thirdly, with tendencies so far as they can be inferred from close consideration of facts and principles.

"New Competition" will be read with benefit by all concerned in the rubber industry, both employers and employes, manufacturers and dealers.

Fundamentals of Cost and Profit Calculation.—By Roberts S. Denham. 8vo., 118 pages. Published by the Cost Engineering Publishing Co., Cleveland, Ohio. Price $1.00.

Unusually clear and concise is this book, which is not too long for a busy man to read and digest. Definite rules or statements are put in italics so as to stand out from the rest of the text. It is well worth reading.

Cost Estimating Tables

From the method by which these figures have been computed, it is known that in some cases the third or even the second decimal place is not correct, but for the purpose of arriving at weights they are sufficiently near.

The weights given are based on specific gravity 1.000, so that by multiplying by the specific gravity of the rubber to be used the desired result is obtained.

VALVES AND WASHERS

1 in. thick. Specific Gravity, 1.000

Dia.)	Weight Ounces.	Dia.	Weight Ounces.	Dia.	Weight Ounces.	Dia.	Weight Ounces.	Dia.	Weight Ounces.	Dia.	Weight Ounces	Dia.	Weight Ounces	Dia.	Weight Ounces
1/16	.00045	11/16	.195	1 1/16	1.110	2 1/16	3.590	4 1/16	7.50	5 1/16	12.80	7 1/16	23.10	9 5/16	42.10
1/16	.00174	11/16	.215	1 1/8	1.200	2 1/8	3.755	4 1/8	7.72	5 1/8	13.13	7 1/4	23.85	9 3/4	43.20
1/16	.0040	11/16	.234	1 1/16	1.293	2 1/16	3.920	4 1/16	7.97	5 1/16	13.41	7 3/8	24.70	9 7/8	44.30
1/16	.0071	3/4	.255	1 3/4	1.390	3	4.090	4 1/4	8.20	5 1/2	13.73	7 1/2	25.50	10	45.50
1/16	.0111	13/16	.277	1 13/16	1.493	3 1/16	4.25	4 3/8	8.45	5 5/8	14.03	7 5/8	26.40	10 1/8	46.50
1/16	.0160	13/16	.300	1 7/8	1.595	3 1/8	4.45	4 3/8	8.70	5 5/8	14.35	7 3/4	27.30	10 1/4	47.65
1/16	.0218	13/16	.324	1 15/16	1.705	3 3/16	4.62	4 7/16	8.94	5 11/16	14.67	7 7/8	28.20	10 3/8	48.80
1/16	.0284	7/8	.347	2	1.815	3 1/4	4.79	4 1/2	9.20	5 3/4	15.00	8	29.10	10 1/2	50.00
1/16	.036	15/16	.373	2 1/16	1.933	3 5/16	4.97	4 5/8	9.48	5 13/16	15.33	8 1/8	30.00	10 5/8	51.25
1/16	.045	15/16	.399	2 1/8	2.050	3 3/8	5.17	4 5/8	9.72	5 7/8	15.67	8 1/4	30.90	10 3/4	52.50
1/16	.054	15/16	.426	2 3/16	2.170	3 7/16	5.37	4 11/16	9.98	5 15/16	16.00	8 3/8	31.80	10 7/8	53.70
1/16	.064	1	.454	2 1/4	2.300	3 1/2	5.56	4 3/4	10.24	6	16.33	8 1/2	32.80	11	54.90
1/16	.075	1 1/16	.512	2 5/16	2.430	3 5/8	5.76	4 13/16	10.51	6 1/16	17.03	8 5/8	33.80	11 1/8	56.20
1/16	.087	1 1/8	.574	2 3/8	2.565	3 5/8	5.97	4 7/8	10.78	6 1/4	17.75	8 3/4	34.80	11 1/4	57.50
1/16	.100	1 3/16	.640	2 7/16	2.690	3 11/16	6.16	4 15/16	11.06	6 3/8	18.45	8 7/8	35.80	11 3/8	58.75
1/16	.114	1 1/4	.710	2 1/2	2.835	3 3/4	6.39	5	11.35	6 1/2	19.17	9	36.80	11 1/2	60.00
1/16	.128	1 5/16	.782	2 5/8	2.980	3 13/16	6.60	5 1/16	11.66	6 5/8	19.93	9 1/8	37.80	11 5/8	61.45
1/16	.144	1 3/8	.857	2 3/4	3.125	3 7/8	6.82	5 1/8	11.92	6 3/4	20.70	9 1/4	38.80	11 3/4	62.70
1/16	.160	1 7/16	.936	2 13/16	3.280	3 15/16	7.05	5 3/16	12.22	6 7/8	21.45	9 3/8	39.85	11 7/8	64.20
1/16	.177	1 1/2	1.022	2 3/4	3.430	4	7.26	5 1/4	12.55	7	22.25	9 1/2	41.00	12	65.40

For example, the weight of a washer, 4 in. diameter, with 2½ in. hole and ½ in. thick, is required, the specific gravity of the rubber being 1.553.

The table for values and washers gives 4 in. as weighing 7.26 oz. From this must be subtracted the size of the hole, 2½ in., which is 2.835 oz. As the table is based on material 1 in. thick, we get the following: —

oz. oz. ½ in. s.g.
7.26 — 2.835 × .5 × 1.553 = 3.43

oz., the weight of the washer.

In the case of solid cord ¾ in. diameter, all that is necessary is to multiply the weight shown in table, i.e., 2.31 × s.g. Supposing this to be 1.315, the calculation is 2.31 × 1.315, which gives 3.03 oz., the weight of 3 feet of cord, ⅜ in. diameter.

The weight of tubing is calculated in the same manner as that of washers, viz., the bore is subtracted from the outside diameter, and the result multiplied by specific gravity. —*The India Rubber Journal.*

TUBING AND SOLID CORD

Specific Gravity, 1.000

Dia.)	Weight 1 Yard.	Dia.	Weight 1 Yard.	Dia.	Weight 1 Yard.	Dia.	Weight 1 Yard.	Dia.	Weight 1 Yard.	Dia.	Weight 1 Yard.	Dia.	Weight 1 Yard.	Dia.	Weight 1 Yard.
	ozs.		ozs.		ozs.		ozs.		ozs.		ozs.		ozs.		ozs.
1/16	.016	1/4	1.30	11/16	4.62	1 1/16	9.97	1 1/16	18.41	1 3/16	40.00	2 1/16	69.60	2 5/16	107.25
1/16	.083	5/16	1.62	3/4	5.18	1 1/8	10.80	1 1/8	20.65	1 5/8	43.20	2 1/8	73.80	2 3/8	112.50
1/16	.144	11/16	1.95	13/16	5.76	1 3/16	11.65	1 3/16	23.10	1 11/16	46.50	2 3/16	78.20	2 11/16	118.00
1/16	.26	3/8	2.31	7/8	6.37	1 1/4	12.47	1 1/4	25.55	1 3/4	50.10	2 1/4	81.80	2 3/4	123.50
1/16	.40	11/16	2.70	15/16	7.02	1 5/16	13.42	1 5/16	28.10	1 13/16	53.75	2 5/16	87.50	2 13/16	129.25
1/16	.58	7/16	3.13	15/16	7.75	1 3/8	14.35	1 3/8	30.85	1 7/8	57.50	2 3/8	92.25	2 7/8	135.00
1/16	.78	11/16	3.60	15/16	8.42	1 7/16	15.32	1 7/16	33.70	1 15/16	61.40	2 7/16	96.80	2 15/16	141.14
3/4	1.02	1/2	4.11	3/4	9.17	1 1/2	16.35	1 1/2	36.80	2	65.15	2 1/2	102.00	3	147.22

SHEET PACKING. S.G. 1,000

S. W. G.		INCHES			
Thickness	Ounces per sq. foot	Thickness	Ounces per sq. foot	Thickness	Ounces per sq. foot
10 g.	10.65	1/16	2.6	11/16	44.2
11	9.65	1/16	5.2	3/4	46.8
12	8.65	3/16	7.8	13/16	49.4
13	7.65	1/4	10.4	7/8	52.0
14	6.65	5/16	13.0	15/16	54.6
15	5.98	3/8	15.6	1	57.2
16	5.34	7/16	18.2	1 1/16	59.8
17	4.66	1/2	20.8	1 1/8	62.4
18	4.00	9/16	23.4	1 3/16	65.0
19	3.33	5/8	26.0	1 1/4	67.6
20	3.00	11/16	28.6	1 5/16	70.2
21	2.66	3/4	31.2	1 3/8	72.8
22	2.32	13/16	33.8	1 7/16	75.4
23	2.00	7/8	36.4	1 1/2	78.0
24	1.83	15/16	39	1 9/16	80.6
25	1.66	1/2	41.0	1	83.3

Trade Information Exchange

Metric Tires

Inquiry No. 36.—We have noticed recently that some American tire manufacturers make clincher tires in millimeter sizes of 105, 120 and 135 millimeters, and would be glad to know if these are new standards to be placed on the market here. Are they interchangeable with American standard clincher tire sizes, and which of the American standard sizes correspond with these metric ones?

Answer.—As far as we know metric tire sizes put out lately by American manufacturers are for export trade only and are to be used on regular metric rims. The above sizes converted into inches would give you something like 4, 4¾ and 5 inches.

Rubber Footwear Machinery Wanted

Inquiry No. 37.—We are contemplating the erection of a plant to manufacture 2000 pairs of rubber footwear daily. Will you kindly give us information as to the best plan for such a factory; also where we can secure the necessary machinery and equipment?

Answer.—It would be difficult to give within the scope of this department, plans for a rubber footwear factory. However, it may be stated that THE RUBBER AGE AND TIRE NEWS has in preparation a series of articles on the manufacture of rubber footwear, which probably will include a layout for a footwear plant.

Rubber Coated Sheet Metal Shells

Inquiry No. 38.—Kindly tell us where we can obtain rubber coated sheet metal shells.

Answer.—The Rubber Insulated Metals Corporation, Plainfield, N. J., makes a specialty of rubber coated metals and all combinations of rubber and metal.

Molded Inner Tubes

Inquiry No. 39.—Please give us any information you have concerning molded rubber inner tubes for automobile tires. We understand that there is in the United States a manufacturer of formed inner tubes and would like to know how this party makes his tubes.

Answer.—The Palmer Tire & Rubber Co., St. Joseph, Mich., manufactures a molded inner tube with a cord fabric insert. There are a number of patents for molded inner tubes, some of which call for manufacturing by the "blowing" process; compressed air being used as a core. William Eggers & Sons, Brooklyn, N. Y., have a process for molding inner tubes, and we believe they use water as a core and a three part mold. A contributor of THE RUBBER AGE AND TIRE NEWS has a story on the manufacture of molded inner tubes in preparation.

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THE RUBBER AGE AND TIRE NEWS

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THE general business ethics prevailing throughout the world prevented any abuse of the Berne Trade-Mark Convention until within last year, when German commercial pirates began establishing their claim to the use of the best American inventions and trade names by registering them in Switzerland at the International Patent and Trade-Mark Offices.

The Berne Trade-Mark Convention is an international agreement, the parties to which are pledged to recognize trade-marks and patents filed at Berne, Switzerland, as if they were filed separately in the thirteen countries which joined in the agreement. The purpose of the Convention was to afford protection to owners of patents and trade-marks by enabling them to gain recognition of their rights in patents and trade names by filing them at one place and for one fee, instead of having this operation to perform separately in each country.

The purpose apparently behind this new German move is to carry on a business war, after the armed struggle is ended, by the same disregard for moral and treaty obligations which has characterized Germany's war methods on land and sea. The scheme enables the German possessors of American trade-marks to flood markets in the countries which are parties to the Berne Convention with cheap German-made goods bearing American trade-marks, or to exclude the American manufacturers until they are willing to pay blackmail for the privilege of selling their goods with their own trade-marks on them.

The Labor Supply

General Crowder's announcement that after July 1 every man of draft age not engaged in a "useful occupation" will have to fight should tend to further disturb the labor market conditions. What effect this new move will have on the rubber factories is difficult to foretell. There are some articles manufactured in the rubber mills that are not necessities for civilian or for war use, although the great majority of rubber products may properly be classed as essentials.

The Government is making increased demands on the factories for war essentials, and this demand promises to increase as the war progresses. Many of the plants are giving special attention to the war's demands and are anticipating that they will be called upon to devote more and more of their energies to this class of work.

There is no disputing the fact that there is a scarcity of rubber workers at the present time; this scarcity is bound to increase unless the rubber factories are classified as plants that produce "essentials." In that case, department store clerks, waiters, bar-tenders in wet states, elevator runners and professional baseball players who choose to remain at home probably will be among those who will try to place themselves in rubber factories so as to be employed in "useful" occupations. This would mean that labor for the rubber factories will be more easy to obtain for a time at least. However, it is believed that before long, when there is a demand for still greater man power "over there" the factory labor problem will become still more serious. The only ultimate solution seems to lie in the increased employment of women.

The problem of maintaining a constant working force is particularly difficult in the neighborhood of large munition workshops, where high wages are a controlling factor in determining a man's choice of employment.

With orders filling the books and every mail bringing pleadings for impossible deliveries, many factory managers are inclined to look upon longer hours as the only means of increasing output.

Great Britain's experience in this matter should not be overlooked, there is no need of repeating in this country her mistakes in regard to the hours of labor. Great Britain's experience points to the conclusion that long hours and overtime are to be avoided if real progress in production is to be maintained. Long continued efforts such as are required in many manufacturing operations, coupled with the monotony of constant repetition, result in a fatigue which is responsible for accidents, for spoiled work and for a lowering of the stamina of the worker. Worst of all they are responsible for a discontent which drives workmen to try other mills or other occupations.

Improved methods and employment of more labor in either single, double or triple shifts must be relied upon to increase output. This practice may or may not represent the best ideas on the subject, but we are faced by a condition and not a theory, a condition which puts every superintendent on his mettle and challenges him to make good under adverse conditions.

The difficulty of securing trained men during the present unsettled conditions is generally known and the time probably will come when the difficulty will have to be controlled for the public good. The new United States Employment Service is a step in this direction, and if properly handled, should prove of value in many branches of industrial endeavor.

Crude Rubber Consumption and Prices

An Opportunity Is Given to Revise Figures on War Service Committee's Questionnaire—Record of Stocks on Hand on March 31—The Crude Rubber Prices That Have Been Fixed—Crude Rubber Transactions

Inasmuch as the Government proposes to audit the figures returned on the questionnaire recently sent to all rubber manufacturers by the War Service Committee of the Rubber Industry of the U. S. A., regarding the consumption of crude rubber for the year 1917, and as it is possible that some manufacturers did not appreciate the importance of the matter at the time the figures were requested, the Committee on Rubber and Kindred Products of The Rubber Association of America, through its secretary, Harry S. Vorhis, has issued a circular to the rubber industry, in which it is suggested that all manufacturers carefully check the figures which they returned and make any corrections if necessary.

What Should Not Be Included

The allocation of each manufacturer will be changed in accordance with the revised figures he sends in. The figures should not include Jelutong (Pontianak), Gutta Percha, Balata and Gutta Siak.

The revised figures should be mailed directly to Irving B. Ferguson, C. P. A., 61 Broadway, New York, who will immediately transmit them to the War Trade Board, in Washington.

Crude Rubber Stocks of March 31, 1918

By direction of the War Trade Board, statistics of crude rubber stocks as of March 31, 1918, were collected from the rubber trade in the United States by the Rubber Association of America, as per a questionnaire sent out at that time to both importers and manufacturers. The War Trade Board has authorized the publication of these figures.

Replies were received from 174 out of 175 importers, who reported the tonnage as follows:

Importers.	In Stores.
Crude rubber	11,224.6
Gutta Jelutong	408.3
Gutta percha	23.9
Balata	19.8
Gutta Siak	88.0
Total	11,764.6

Replies were received from four hundred and eighty-six out of four hundred and ninety-five manufacturers who reported the following tonnage:

Manufacturers.	In Stock at Factory.
Crude rubber	18,512.7
Gutta Jelutong	2,225.4
Gutta percha	117.8
Balata	111.8
Gutta Siak	608.0
Total	21,575.7

The total tonnage for manufacturers and importers as of March 31, 1918, was as follows:

	In Stores and in Stock.	In Transit and Afloat.	Total.
Crude rubber	29,737.3	57,835.1	87,572.4
Gutta Jelutong	2,633.7	1,607.4	4,241.1
Gutta percha	141.7	241.1	382.8
Balata	131.6	171.0	302.6
Gutta Siak	696.0	360.5	1,056.5
Total	33,340.3	60,215.1	93,555.4

Crude Rubber Prices

On May 15 the Committee on Rubber and Kindred Products of the Rubber Association received from the War Trade Board the following letter which is of importance to rubber manufacturers and crude rubber importers, who should take note of the situation set forth and govern themselves accordingly:

WAR TRADE BOARD,
WASHINGTON, May 14, 1918.

The Rubber Association of America, Inc., 17 *Battery Place, New York City.*

GENTLEMEN,—It has been called to the attention of the War Trade Board that certain importers have demanded, as a condition under which they would sell to manufacturers unallocated rubber, i.e., rubber on the spot or shipped on or prior to May 8, that a purchase be made from them at the same time of allocated rubber. This is totally contrary to the spirit of the Government option clause setting maximum prices, and we would thank you to call our immediate attention to any specific instances where any such demands are made.

Very truly yours,
(Signed) FRED B. PETERSON,
Director.

On April 30 the War Trade Board fixed a price at which the United States Government should have an option of purchasing certain standard qualities of rubber, and stated at that time that on all other grades of crude rubber the prices should be at their relative values to be determined later on by the War Trade Board.

These valuations have now been fixed and they are given in a letter to the Committee on Rubber and Kindred Products of the Rubber Association, which reads in full as follows:

WAR TRADE BOARD,
BOND BUILDING, WASHINGTON, May 14, 1918.

The Rubber Association of America, Inc., Whitehall Building, 17 *Battery Place, New York City.*

GENTLEMEN,—Supplementing its letter of April 30, fixing maximum prices on standard qualities of crude rubber, the War Trade Board requests that you immediately cause proper notice of the contents of this letter to be given to the rubber manufacturers and importers and others interested in the subject. You may use copy of this letter for the purpose.

On the Docks and in Transit Overland in the United States.	Afloat for American Ports.	Total.
20,754.0	14,832.7	46,811.3
604.0	772.0	1,784.3
33.0	207.0	263.9
6.6	151.3	177.7
156.0	140.0	384.0
21,553.6	16,103.0	49,421.2

In further protection against speculative dealing and profiteering, and supplementing the option and guarantee clause which you are directed to have inserted in the present rubber guarantee, the following prices are fixed, effective May 14, 1918, for grades other than those fixed on April 30.

	In Transit Within United States Invoiced by Seller.	In Transit Imported by Mfrs. Direct.	Total.
Crude rubber	15,033.5	7,214.9	40,761.1
Gutta Jelutong	206.4	25	2,456.8
Gutta percha	1.1	.....	118.9
Balata	13.1	.....	124.9
Gutta Siak	64.5	.....	672.5
Total	15,318.6	7,239.9	44,134.2

	Cents per Lb.
Plantation Qualities:	
Off standard Latex Crepe	62
Off color Latex	61
No. 1 Amber Crepe	60
No. 2 Amber Crepe	60
No. 3 Amber Crepe (Medium color)	58
No. 4 Amber Crepe (Darkish color)	57
Prime, clean, light brown Crepe, thick and /or thin	60
Medium color brown, clean Crepe, thick and /or thin	58
Good dark brown Crepe, thick and /or thin	54
Specky brown Crepe, thick and /or thin	50
Massed or rolled Crepe	44
Colombo Scrap No. 1 Quality	46
Colombo Scrap, No. 2 Quality	44
Standard Quality smooth smoked sheets	60
Standard Quality unsmoked sheets	61
Mexican Guayule:	
Guayule crude, with 20% guarantee of shrinkage	35
Clean, dry and treated Guayule, such as: Duro, Triangle, Box, Torreon and Alto brands	48
Para Grades:	
Upriver Medium	63
Upriver weak fine	56
Upriver Coarse	40
Upper Caucho Ball	40
Xingu Ball	38
Lower Caucho Ball	36
Islands Fine	59
Islands Coarse	27
Cameta	28
Central American Grades:	
Central Scrap—Esmeralda, Corinto, Mexican, Bluefield	39
Central Slab—Guatemala, Colombian, Mexican and other slabs of similar nature	32
African Grades:	
Red Congo Ball	48
Black Congo—Kassai, Lopori, Equateur, Sangha and similar grades	50
Benguellas—	
32½% shrinkage	29
28% shrinkage	33
Niger Paste and Flake	28
Red Kassai—Nuggets, Cords and similar grades	42
Massais	55
Rio Nunez	55
Miscellaneous:	
Mattogrosso Fine	53
Mattogrosso Coarse	38
Penang (this includes Java)	37
Caucho Tails	35

All the above valuations are on the basis of c.i.f. New York.

You will please take due measures to procure the proper guarantees from all signatories of the rubber undertaking to the effect that the Government shall have an option at the aforesaid prices, to the same extent as already given on the grades the maximum price of which has heretofore been set.

Yours very truly,
(Signed) FRED B. PETERSON,
Director.

Importers and manufacturers are cautioned by the Committee on Rubber and Kindred Products not to make any contracts after this date at prices exceeding those set forth above.

Crude Rubber Transactions May 14 and 15

There has been much incertitude in the trade regarding transactions in crude rubber between manufacturers, importers and dealers which had taken place on May 14 and 15 at prices above the valuations fixed by the War Trade Board. The Rubber Association of America has been informed by the War Trade Board that transactions made in good faith on May 14 and 15 in grades of rubber, the price of which had not been fixed definitely at that time, may remain (subject to Government option) at the prices agreed upon between buyer and seller upon the condition that copies of the contracts be filed with the War Trade Board promptly.

Converse Insures Its Employes

The Converse Rubber Co., Boston, Mass., has placed insurance amounting to $1,200,000, with the Aetna Life Insurance Company for its employes, and believes this an important business investment—not philanthropy. The company considers it as a bonus to workers for faithful service. It considers that a bonus in the form of insurance will best serve the interests of employes, because many would otherwise probably not carry it. Presenting every steady employe with life insurance, and a larger amount of insurance for a greater length of service, puts a premium on permanancy of employment.

APPLICATION

For Replacement of Crude Rubber Used Only on Government Contracts

(Do not list contracts from two or more Government Departments on one application. Make a separate application for each Department's contracts.)

TO THE BUREAU OF IMPORTS,
War Trade Board,
Washington, D. C.

The undersigned hereby makes application for permission to import _____ pounds of crude rubber to replace that which was used only in filling government contracts in the month of _____, 1918, as follows:
(See page No. 4 for definition of terms)

Contracts with _____ Department.

Direct Government Contracts

Government Contract No.	Quantity of Article	Name of Article

Indirect Government Contracts

Government Contract No.	Name of Contractor	Quantity of Article	Name of Article

Form of Replacement of Crude Rubber

A form of application which is to be used by all manufacturers in applying for replacement of crude rubber used for Government purposes has been issued by the Committee on Rubber and Kindred Products.

The plan is for each manufacturer, as soon as practicable after the first of each month, to make an application on this form showing the amount of crude rubber he used for Government work during the preceding month. The application is to be mailed directly to the Bureau of Imports of the War Trade Board, Washington, D. C., which will promptly issue certificates allowing the importation of an equal amount of crude rubber.

In connection with this application form it must be noted that a recent ruling of the War Trade Board provides that only rubber which went into consumption on or after May 6 is subject to replacement.

The first application for replacement should be made as soon as possible after June 1 for rubber which went into consumption on or after May 6. Application forms are supplied by the Rubber Association of America, 17 Battery Place, New York, upon request.

Manufacturers' Affidavit

(To be sworn to before duly authorized Notary Public or Justice of the Peace)

The undersigned, being first duly sworn, on oath says that the _____ _____ (Name of firm.) used _____ pounds of crude rubber in the foregoing specified contracts during the month of _____, 1918.

Subscribed and sworn to before me this _____ day of _____, 1918.

_____ (Name of corporation, firm, or individual.)

By _____ (Name of officer legally empowered to act for applicant.)

_____ Notary Public.

In and for _____

Government Certificate

(To be signed only by a Government official or employee)

I hereby certify that the foregoing named contracts as specified were on file in the _____ Department, in the month of _____ 1918.

Signed _____ (Name.)

_____ (Position.)

_____ (Date.)

Definition of Terms

1. The term "*Government*" includes the United States Government and the Allies.

2. The term "*the Allies*" shall be taken to mean the nations associated with the United States in the war in which it is now engaged.

3. The term "*DIRECT GOVERNMENT CONTRACT*" signifies any contract placed directly with the manufacturer by any governmental department or the Allies. (Government Controlled Railways and American Red Cross are considered as Governmental Departments.)

4. The term "*INDIRECT GOVERNMENT CONTRACT*" signifies any order for materials, supplies or equipment necessary as a component part of a direct Government Contract which is placed with another firm and for which the manufacturer can show the Government Contract number.

EXAMPLE "A"—Tires sold to motor car manufacturer who sells the trucks to the Government. The motor car manufacturer secures his contract from the Government and gives his order for tires to the rubber manufacturer. The latter must get from the motor car manufacturer the contract number under which his trucks are being delivered (this contract number to be shown on his application for replacement), and also an affidavit that that number of tires went to the Government. The rubber manufacturer must attach this affidavit to his application for replacement, together with an affidavit that the crude rubber content of those tires was a certain number of pounds.

EXAMPLE "B"—Battery jars sold to battery manufacturers for submarines. The submarine boat builder secures his contract from the Government and orders his batteries of the battery manufacturer, specifying the Government contract number, making affidavit that the batteries are to apply on the Government contract specified. The battery manufacturer orders his battery jars of the rubber manufacturer, who must also get from the battery manufacturer the Government contract number, together with affidavits from the boat builder and the battery manufacturer that the batteries are for the Government under the specified contract number. These two affidavits must be attached to the manufacturer's application for replacement, together with the rubber manufacturer's own affidavit that the battery jars were delivered to the battery manufacturer and specifying the amount of the rubber content of the battery jars furnished in accordance with the affidavit of delivery. In this case the contract number goes through two hands.

National Foreign Trade Convention

Banking Facilities for Foreign Trade and Investment—Initiatory Problems —Commercial Education—Cooperation—Foreign Credits and Credit Information—Problems of the Small Manufacturer and Exporter—Pacific Trade Extension

The Fifth National Foreign Trade Convention, which closed in Cincinnati, Ohio, on April 18, and which was attended by over 900 delegates representing leading industrial firms and organizations of the country, was one of the most interesting conventions yet held. The majority of the delegates viewed foreign trade as an essential to our national existence.

Every session of the convention demonstrated the fact that to win this war the Allies must have great quantities of raw materials. These are necessary for the munitions of war as well as the sustenance of the people. The United States must do its part, and it is a large one in furnishing the manufactured products for the war, and, to furnish these, raw materials must be obtained from Latin-American countries, from Asia and Oceania.

It is just as imperative that we secure these raw materials as it is that we furnish manufactured product and munitions for the war. We cannot hope to get these raw materials without in turn exporting to the countries from which these materials are obtained; and to do this we must export those materials that those countries need. Thus, our foreign trade is an essential to war, and, while at the present time we need on the North Atlantic all available tonnage to transport our armies and their supplies as well as supplies for the Allies to Europe, at the same time everything is being done to maintain the necessary ocean tonnage to those parts of the world from which we are securing the necessary raw materials.

The convention adopted for its motto the apt phrase: "The Part of Foreign Trade in Winning the War," and the conclusions of the convention which were agreed upon at its close established the fact that every step in our foreign trade must have in mind this aspect of winning the war.

The opinions of the convention emphasize the fact that our foreign trade must be maintained throughout the war for two reasons:

First, we must maintain this trade to assure ourselves adequate supplies of raw materials for war needs and for home consumption.

Second, we must maintain our foreign trade to retain our financial standing among the nations of the world.

In the control of imports and exports under the War Trade Board, the one thought is to conserve all tonnage for the North Atlantic trade, and only restrict imports and exports as necessary and imperative to such conservation. No restrictions are being placed on such trade without carefully examining into each case. In granting permission to export as well as to import, preference must be given to those commodities essential in the war.

In connection with the building of our merchant marine, it is essential to develop the southern ports of the country because the congestion in the Atlantic ports is at present an impediment to ocean traffic.

The passing of the Webb-Pomerene Bill and its approval by the President on April 10, 1918, is highly satisfactory, as it permits of co-operation in foreign trade which has been impossible heretofore in America. At the same time Germany has practically made it mandatory on her organizations to concentrate and co-operate in foreign trade, and the government has stood back of the merchant with the finances and protection necessary. At the same time the United Kingdom has encouraged co-operation and the government has assisted in the development of foreign trade. Greatly increasing numbers of firms must enter into the foreign trade of America if the volume of trade is to be equal to the volume of imports that we require from foreign countries.

For the better development of our foreign trade greater educational attention on the part of our schools and universities must be given to the preparation of our young men for foreign trade. Special attention must be given to those languages most essential for a proper carrying out of foreign trade. If our foreign trade is to develop as that of other countries, more of our citizens must take up their residence in foreign lands and give their personal attention to our interests there—a policy followed by Great Britain, France and Germany.

Congress should adopt a policy of a flexible and bargaining tariff, in order that the future of our foreign trade should follow lines of least resistance.

The National Foreign Trade Council should make a careful survey of the raw material supply of the world, so that America will be able to protect herself and her industries after the war.

While these were the general conclusions with regard to the broad policy of foreign trade after the war, there were many additional conclusions which were agreed upon, not by the convetion as a whole, but by eight different groups into which the convention was divided during half of its sessions. These groups considered different aspects of foreign trade, and were generally attended by 150 to 400 delegates each. Exactly 50 per cent of the total time of the convention was given over to these group meetings and the remaining 50 per cent to general sessions of the convention.

Group I. Banking Facilities for Foreign Trade and Investment.—This group favored a more general use of Trade Acceptances. It favored the enactment of the Glass Bill into law. Economic conditions that will confront the country after the war must be given quick attention, the same as is being done in Great Britain, France, Italy as well as the Central Powers, and the group favored the appointment of a Cabinet Minister to supervise this general problem of economic reconstruction following the war. It further recommended the appointment of a committee to consider the many fundamental problems that must be solved before our foreign trade can be on a sound financial basis.

Group II. Initiatory Problems in Foreign Trading.—The conclusions of this group were that it is necessary in foreign trade to first make a careful study of the country, then a careful study of the people and their characteristes; next the different reasons, and lastly to differentiate among different sections of foreign countries where it is necessary to handle foreign trade in different ways. American manufacturers must be ready to give credit to buyers in establishing foreign trade. The opinion was that where a small sum, such as $10,000, is the only appropriation for beginning foreign trade, that such firms had better place the foreign trade in the hands of some exporter rather than to attempt to handle the trade itself.

It must be generally realized that the cost of carrying on foreign trade is higher than that of carrying on domestic trade. It is essential if we expect to hold our foreign trade after the war we must operate with high ideals and take the highest pride in the class of goods exported, and also in the methods of exporting.

Group III. Commercial Education for Foreign Trade.—It is essential that those carrying on our foreign trade must be properly educated for the work the same as has been necessary and found so satisfactory in European countries.

Group IV. Co-operation in Foreign Trade.—Heretofore America has had no policy with regard to co-operation in foreign trade, but passing of the Webb Bill is a start in this movement. Germany has made co-operation and concentration of industries mandatory in many cases. Great Britain has encouraged voluntary co-operation and the government favorably assists in all such co-operation for foreign trade. America must adopt a definite policy in this work.

Group V. Foreign Credits and Credit Information.—The extending of credits in foreign trade is essential. Greater care must be given to investigation of foreign credits before sales are made. It is recommended that our consular service be extended so as to assist in credit information supplies.

Group VI. Problems of the Smaller Manufacturer and Merchant in Export Trade.—It is recommended to create some form of foreign insurance which will cover the credit of foreign firms buying goods, the American exporter to have his own manager caring for his foreign business rather than entrusting it to representatives of other countries.

Group VII. Pacific Overseas Trade Extension.—The need of American owned ships for the Pacific trade is essential. At present Japan really controls the carrying of goods over the Pacific, and the country that controls ships generally controls the trade. The Orient is one of the greatest undeveloped markets of the world, and our Government should give the protection to our business men in getting their share of this market that European governments have afforded their business organizations.

Rubber Drinking Tube and Water Filter

To enable soldiers, hunters, fishermen, motorists, campers and travelers in general to drink out of lakes, creeks, and rainpools without danger of swallowing insect *larvae* and similar impurities, the Ideal Rubber Co., Los Angeles, Cal., has placed on the market a little device which it designates as a drinking tube and water filter. The outfit consists of a suitable length of rubber tubing with a mouthpiece and filter cup of molded rubber. The filter cup can be packed with cotton to act as a filter. Patent has been applied for by the manufacturers.

Makes Donation in Employes' Memory

Fritz Achelis, president of the American Hard Rubber Company, College Point, N. Y., recently presented the trustees of Poppenhusen Institute a check for $30,000 in memory of A. T. Schlesinger and William F. Kiehl, former employes of the company, for the creation of two classes in the institute in practical mechanics. The check was presented at exercises held to commemorate the institution's fiftieth anniversary.

Germans by Trick Seize Rubber Trade Names

Austrian Representatives of Germans Register American Trade Marks and Bar American Manufacturers from Using Their Own Brands in Countries Parties to the Berne Trade Mark Convention—Many Rubber Companies Affected by New Form of Piratry

American manufacturers of rubber tires and various other articles known by trade names have discovered recently that German trickery has barred them temporarily at least from doing business in Holland, Brazil, Argentina and Chile. These countries are parties to the Berne Trade Mark Convention, an agreement under which they are pledged to recognize trade-marks and patents filed at Berne, Switzerland, as if they were filed separately in the thirteen countries which joined in the agreement. The purpose of the convention was to afford protection to owners of patents and trade-marks by enabling them to gain recognition of their rights in patents and trade names by filing them at one place and for one fee, instead of having this operation to perform separately in each country.

The most active in registering American trade-marks is said to be one Richard Mittler, an Austrian, as it has been necessary for the Germans to use Austrians, Austria being a party to the Convention, while Germany is not. One page of the advertising section of *Les Marques Internationales*, the official publication of the Berne Convention, contains the advertisements of no less than seven brands of tires and other rubber goods whose trade names have been captured by Mittler. These are: Ajax, Federal, Firestone, Fisk, Republic, Empire, Vitalic, and Thermoid.

A. E. Parker, a patent lawyer who discovered the wholesale effort of German dealers to commandeer markets for American goods when he sought to register trade-marks in Holland and found that Mittler had anticipated him, has prepared a circular on the subject to warn American manufacturers and exporters. He says:

"It is believed that the plan is being fostered and encouraged by the enemy governments, and it consists of the attempt to control the sale of American goods in foreign markets by securing registration abroad in the name of the enemy trader of the trade-mark by which the goods are known and advertised. These efforts are chiefly directed to the securing of a control of valuable American trade-marks in the Argentine Republic, Brazil, and Chile (which countries recognize the first to register a mark as the rightful owner, to the exclusion even of the bona fide trader who may have used the mark previously in those countries).

"The thirteen countries which are parties to this International Convention are Austria, Belgium, Brazil, Cuba, Spain, France, Hungary, Italy, Mexico, Holland, Portugal, Switzerland, and Tunis."

As the United States is not a member, it is necessary for the American manufacturer who wishes to do business in any or all of the thirteen countries to register his trade-marks in each country separately. Many American manufacturers are at a disadvantage now because they failed to register trade-marks, either through neglect to acquaint themselves with the international practices on the subject, or because they did not foresee the expansion of their business which would place them in need of trade-mark protection in the countries into which they were sending their goods.

In discussing the situation Mr. Parker says:

"Unless the American trader has previously registered his trade-mark in these countries he will find in many cases that he will not only be debarred from registering there (if a convention registration extending to such country has been secured), but his goods are liable to be confiscated on arriving at the port of entry in such country, and he will be condemned to pay damages for infringement of his own trade, which will be owned in that country by an enemy rival.

Real Owners Barred Out

"The Department of Commerce now has under consideration what measures can be taken to recover the rights thus acquired by the Austrian firm. Many cases can be quoted where such international registrations have been used to prevent bona fide applications to register American trade-marks in one or other of the countries forming the union, and official records show that such well-known trade-marks as those of three leading American typewriters, the Jap Rose mark for soaps, the Foos gas engine mark, (registered by a former German agent of the company in Belgium and then registered internationally by him under the Berne Convention,) the Waukegan mark of the American Steel and Wire Company, and many others have been pirated by Germans, and no negotiations now being permissible with the enemy pirate owners thereof, these registrations, unless they can be recovered in the settlement of the peace terms, are likely to be permanently lost to their rightful owners.

"It is not uncommon, moreover, for the German pirates to have their branch houses in the South American countries register the marks in the name of a company established under the law of such country, but controlled by the German firm, and, while normally negotiations with such South American companies could be carried on, these companies are in most cases on the enemy trading list, so that no communications with them would now be permitted.

"While this form of trade-mark piracy is not restricted to subjects of enemy countries, as it has been common for years past in Cuba, Argentine Republic, Chile, Scandinavia, and other countries, it seems timely to call attention to the danger of serious interference with after-the-war trade of American manufacturers who do not make the small investment involved in securing registration of their trade-marks in advance of registrations effected by others.

"The benefits secured by the passage of the Webb Export act will be materially enlarged if all proper measures are resorted to which tend to secure a legitimate monopoly in the use of the trade-mark or brand by which the goods of the particular trader are recognized and identified."

C. C. Allen Goes with Rex-Hide

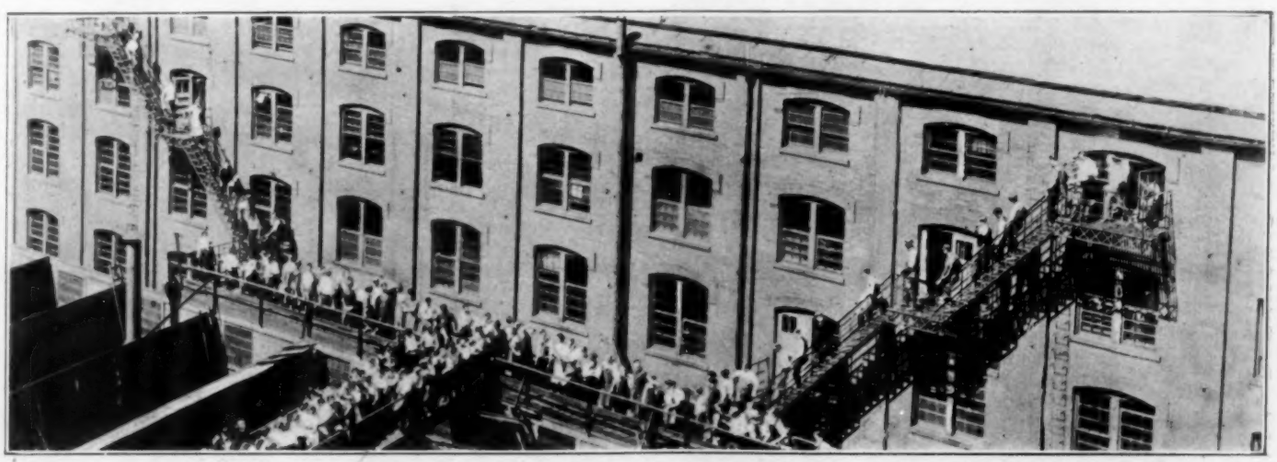
The Rex-Hide Rubber Manufacturing Co., of East Brady, Pa., announces that in the future C. C. Allen, a prominent shoe man, will be in charge of Rex-Hide sales in St. Louis and adjacent territory.

Mr. Allen is thoroughly familiar with manufacturing conditions in the shoe industry.

Manufacturers in the St. Louis territory will be glad to know that on Mr. Allen's first round of calls for Rex-Hide soles, he will be accompanied by M. N. Davis, sales manager of the Rex-Hide Co., who was formerly quite well known in this district as special representative for the B. F. Goodrich Rubber Co., of Akron.

Goodyear Wireless School

The classes in wireless telegraphy that were started in the factory school of the Goodyear Tire & Rubber Co., at Akron, Ohio, last January, have now completed their work and the men have been sent to the Government school at the Carnegie Institute at Pittsburgh to complete their training for the Signal Service Corps.



FIRE DRILL AT THE B. F. GOODRICH PLANT IN AKRON

News Items of Interest to the Rubber Trade

Panther Buys Plant in Trenton—Browning Promoted to Denver—A. L. Comstock Dies—Vulcan to Erect New Factory—Spring Stimulates Building in Akron—Industrial Chemical's New Location

Panther Buys Plant in Trenton

The Panther Rubber Mfg. Co., Stoughton, Mass., has purchased a portion of a large factory owned by Edmund C. Hill & Co., real estate brokers, in Trenton, N. J., located at the foot of Perrine Avenue in that city. The purchase price is said to have been about $25,000.

The new owners intend to rebuild the part of the plant they have purchased and install modern machinery.

A. L. Comstock Dies

Allen L. Comstock, formerly identified with the rubber business in Boston, died recently at Pasadena, Cal. Mr. Comstock was born in 1850 in Uncasville, Conn., and went to Boston in his youth. He worked in Cambridge in the first rubber factory established there. He finally became manager of the United States Rubber Co. branch. He was for many years connected with the late R. D. Evans in this industry.

Rubber Importers and Dealers Co.

Robert Badenhop Co., 69 Wall Street, New York City, announce that their crude rubber importing business will in the future be known as the Rubber Importers & Dealers Co., Inc., which will be managed, as it has been for the past two years, by H. W. Holcombe and Sloan Lamont. There will be no change in the nature or policy of the business.

Vulcan to Erect New Factory

The Vulcan Proofing Co., 583 Dean Street, Brooklyn, N. Y., manufacturers of rubberized fabrics, have awarded the contract for a 2-story, 130x308 ft., factory to be erected on First Ave., near 57th St., Brooklyn. It is estimated that this factory will cost $200,000.

A. D. Rogers Dies

Albert Dunlap Rogers, son of the late Judge John H. Rogers, who was on the federal bench at Fort Smith, Ark., died on board a train between Cincinnati and Nashville. Mr. Rogers was a director of the Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio.

Campbell No Longer with Pierce

The Pierce Wrapping Machine Co., 617 West Jackson Boulevard, Chicago, Ill., announce that its former treasurer, John S. Campbell, is no longer connected with the concern in any official capacity.

Collyer Wire Co. Increased Capital

The Collyer Insulated Wire Co., of Pawtucket, R. I., has recently filed a notice that the stockholders have voted to increase its capital stock from $200,000 to $500,000.

Bourn Buys Property

According to records filed recently at the Providence, R. I., City Hall, Charles B. McPhillips has sold property on Waldo Street, Providence, to the Bourn Rubber Co., Providence, R. I.

Rinex in Canada

The Canadian Consolidated Rubber Co., Limited, of the Dominion Rubber System, has appointed the Canadian Advertising Agency, Limited, of Montreal, to handle a campaign for Rinex soles in Canada.

Browning Promoted to Denver

It has been announced by H. J. Woodard, General Sales Manager of the Republic Rubber Corporation, that L. E. Browning has been appointed District Manager

L. E. Browning

in the mountain States of Montana, Idaho, Wyoming, Utah, Colorado, Arizona and New Mexico with headquarters at 1546 Broadway, Denver, Col.

Prior to this Mr. Browning was connected with the Kansas City branch of the corporation and had charge of the sales end of mechanical rubber goods in that territory.

Westinghouse Absorbs Electric Stove Co.

It has been announced by the Westinghouse Electric & Manufacturing Co., Schenectady, N. Y., that the Copeman Electric Stove Co. will be merged and known as the Westinghouse Electric Products Co., with headquarters and factory at Mansfield, Ohio. The factory will be devoted to the manufacture of heating appliances previously made at the Newark, N. J., works of the Westinghouse Company, and the Flint, Michigan, works of the Copeman Electric Stove Co.

The operations of the Westinghouse Electric Products Co. will be directed by W. K. Dunlap as general manager. Mr. Dunlap is also assistant to the vice-president of the Westinghouse Electric & Mfg. Co.

Spring Stimulates Building in Akron

The advent of spring has greatly stimulated the building of new homes on Goodyear Heights, the famous home-building community of Goodyear Tire & Rubber Co. employes, at Akron, Ohio. During the winter a large amount of building material was secured for work in the spring, and now that the weather is favorable, new houses are being built rapidly.

Industrial Chemical's New Location

The Industrial Chemical Co. is now located in its new quarters in Wakefield, Mass. The Taylor Building, which this concern now occupies, has been equipped with machinery and is in operation. This company, whose New York offices are at 200 Fifth Avenue, manufacture standard and special qualities of whiting for the rubber industry.

Great Lakes Co. to Build

The Great Lakes Rubber Co., Milwaukee, Wis., recently incorporated for $100,000, has secured an option on a five-acre tract of land at Cudahy, Wis., where it plans to erect a factory with a floor space of 40,000 square feet. It is expected that the company will start business late in the summer.

Will Improve Statistics to Aid Trade

Assistance of Business Men Sought to Revise and Extend Statistics for War Purposes and After-the-War Trade Promotion—The Bureau of Foreign and Domestic Commerce Has Undertaken This Important Work—Other War Agencies Are Cooperating

With the immediate object of furnishing more detailed and accurate information for the war boards engaged in licensing imports and exports and conserving tonnage, foodstuffs, and raw materials, a radical revision and extension of the Government's foreign trade statistical classification has been undertaken by the Bureau of Foreign and Domestic Commerce, Department of Commerce. To this end the business public is urged to make immediate suggestions as to new classes of goods that ought to be shown in the trade statistics or new subdivisions of the present classes.

Although the present need for more specific statistics is largely brought about by the war, the Bureau desires to make the statistics of the largest possible permanent value in its work of promoting foreign commerce after the war. The more extended use of statistics for commercial instead of purely legislative purposes was the moving factor in transferring the work of collecting and publishing foreign trade statistics to the Department of Commerce years ago, and since the Bureau of Foreign and Domestic Commerce has been in charge of the work an extensive educational campaign has been carried on to induce business men to study the statistics in planning extension of foreign markets. The classification has been amplified from time to time to meet the increasing needs of commercial interests for this purpose.

The Tariff Commission, the Food Administration, the War Trade Board, the Shipping Board, and other war organizations are co-operating with the Bureau in the effort to obtain a more detailed classification and will take measures to insure compliance with the official regulations.

In making suggestions for the export classification the business man should bear in mind that the statistics are based on the description of merchandise as shown in export declarations filed by the shipper with the collector of customs at the port of clearance. A too detailed classification going beyond commonly used commercial terms must therefore be avoided. Likewise suggestions regarding imports should be made with due regard to the fact that statistics of imports follow the tariff classification and that subdivisions for statistical purposes beyond customs requirements are difficult to obtain and are apt to result in inaccurate and misleading figures.

Happenings at Naugatuck

New Lunch Room and Hospital Opened at Goodyear's Metallic Rubber Shoe Co. Plant—Salesroom to Be Rearranged—Thompson in Charge of Employment Department—New Storage Building—Fifty-six Men Now in Service

The new lunch and recreation room for the employes of the Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn., was opened recently. The lunch room is fitted up with up-to-date equipment and will accommodate about 200 people at one sitting. All food is served at cost.

An orchestra composed entirely of employes plays during the noon hour three times a week, and space is reserved for dancing.

The service is on the cafeteria plan. The lunch room is open for morning lunch (a la carte) from 8 a. m. to 9:30 a. m., and from 11:30 a. m. to 1 p. m. a regular dinner is served for 25 cents, while a la carte service also continues during this time.

The Goodyear's Metallic Rubber Shoe Co. is planning to rearrange its present salesroom in order to take care of the increasing activities of the employment department. This department will be on the first floor of the storehouse building, next to the new concrete building which is being built on Water Street.

The employment department will be much more central and will occupy a much larger space than ever before. It will be located in the same building which is given up to other general activities, such as the restaurant, hospital, rest room and recreation room.

The employment department will be in charge of Richard Thompson. John J. Gorman is the contractor in charge of the work.

A four-story concrete building is being built on Water Street, which will serve as a central storage plant for both the Goodyear's Metallic Rubber Shoe Co. and the Goodyear's India Rubber Glove Mfg. Co. The basement will be utilized for the grading, sorting, and washing of crude rubber for both plants, while on the top floor will be a dry room for the drying of the rubber.

The first floor will be devoted to compounding, mixing and operating of sole calenders. The second floor will be used for heel presses, sole table, outsole cutting, and similar work. Raw material will be stored on the third floor and on that part of the fourth floor which is not occupied by the dry room.

First Aid and Operating Room—Goodyear's Metallic Rubber Shoe Co. Hospital

Goodyear's Metallic Rubber Shoe Co. Hospital

The building is 203 x 70 feet and reflects credit upon the skill of the builders, the National Engineering Corporation.

Fifty-six men from Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn., have entered the service up to date. The most recent volunteers and drafted men are Eugene Gladding, Frank D. Smith, Michael Kenny, Thomas Murtha, Anthony Kukstis, Charles Logis, Frank Affhauser, Joseph Reilly and Raymond Forbes.

Several letters have been received from the men overseas who are all very enthusiastic. Harold L. Goodwin, who has been made a sergeant and is stationed at the American Salvage Depot, Q. M. C. N. A., A. E. F., A. P. O. 717, writes that some of the fellows in his company are equipped with bath mits made by this concern.

Sergt. John E. O'Donnell, who began his ordnance training at Dartmouth and then was transferred to Camp Jackson, S. C., was one of the men chosen from Camp Jackson to go the officers' training camp at Camp Meade.

The company's new recreation room, adjoining its restaurant presents an animated scene during the noon hour, especially on the three days in each week when the factory orchestra gives a musical program. On these days there is dancing.

Another of these institutions which is greatly appreciated is the rest room, which adjoins the company's hospital. It is finished in oak and has mission furniture.

The new hospital which has been recently completed, has been equipped in the most modern way. It is finished in white enamel, with sanitary floors. It has all the necessary appliances for surgical treatment and is in charge of a graduate nurse.

The installation of the candy and gum slot machines in the factory is proving a very popular innovation. The net proceeds from the sale of gum and chocolate in these machines will be set aside as a benefit fund for the employes of the company.

The new restaurant is becoming more popular as the employes realize that they can get an excellent dinner at small expense. The force of cooks and waiters and waitresses, who are all employes of the company, are doing their work in a most efficient manner. Recently fifty-two persons were served in seven minutes, and this time is being reduced each day.

American Rubber Patents

ISSUED APRIL 23, 1918.

1,263,356—To Reinhart B. Altenburg, Davenport, Ia. Adjustable tire-rim.

1,263,400—To Arthur A. Frank, Milwaukee, Wis. Tire former or core.

1,263,462—To Walter Price Payne, New Haven, Conn., assignor to L. Candee & Co., a corporation of Connecticut. Method of vulcanizing Rubber.

1,263,499—To Maurice T. Whiting, Needham, and Edward F. Logan, Lynn, Mass., assignors to The Barrett Co., Boston, Mass. Bottom-filler for boots and shoes.

1,263,517—To George J. Bromhead, New York, N. Y. Tire-inflating device.

1,263,555—To Ellis S. Helwitz, Brooklyn, N. Y. Shoe heel.

1,263,585—To Arthur E. Meier, Chicago, Ill. Ball.

1,264,381—To Clark Francis Fisk, Trenton, N. J. Tire-tube and method of construction.

1,264,398—To Paul S. Jacobs, Atlantic Mine, and George W. Hogben, Houghton, Mich. Vehicle wheel.

1,264,463—To Harris Weiner, New York, N. Y., assignor of one-fourth to Eliza B. Weber, New York, N. Y. Tire chain.

1,264,542—To Horace Mote, Detroit, Mich. Demountable and separable vehicle wheel rim.

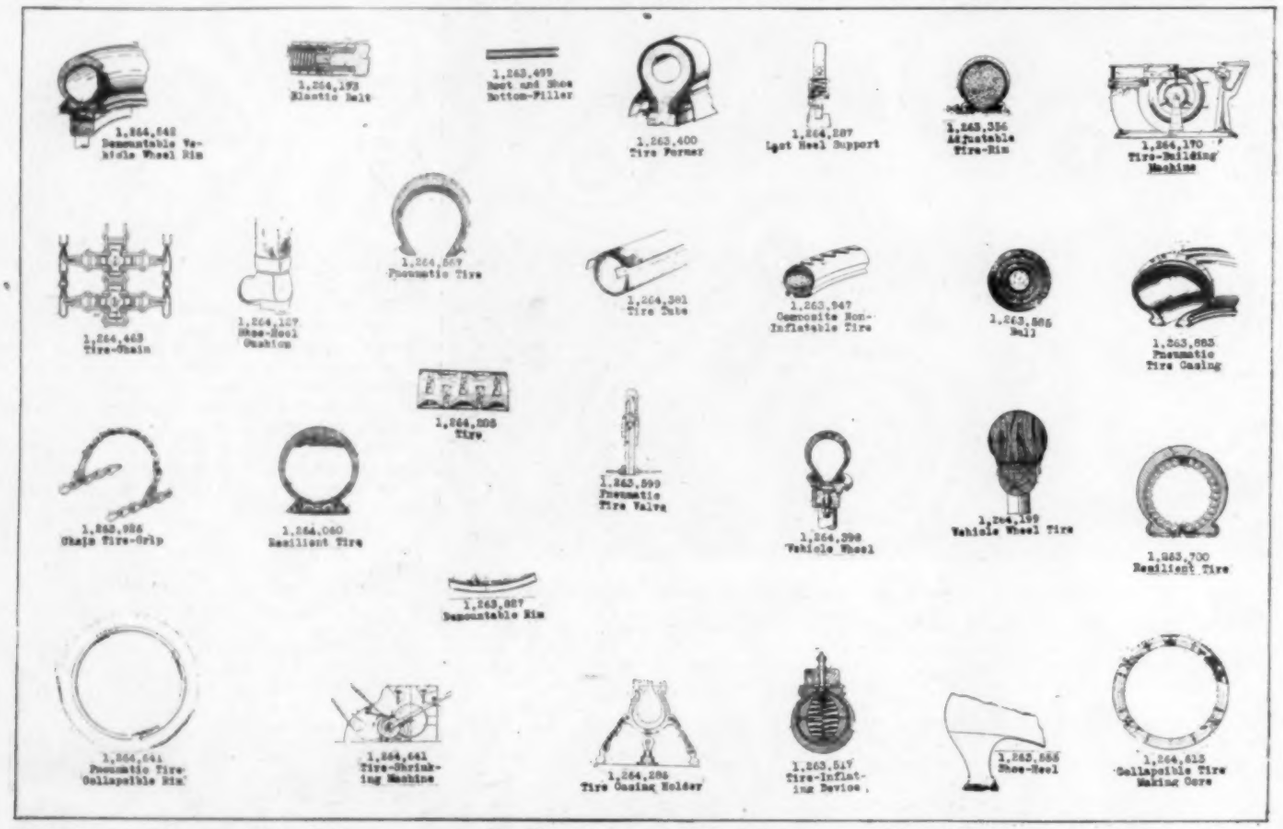
1,264,567—To De Wane B. Smith, Deerfield, N. Y. Pneumatic tire.

1,264,613—To Francis B. Converse, Akron, Ohio, assignor to the B. F. Goodrich Co., New York, a corporation of New York. Collapsible tire-making core.

1,264,622—To Warren E. Dressel, Edwardsville, Ill., assignor to the Ideal Collapsible Rim Co., Edwardsville, Ill. Collapsible rim for pneumatic tires.

1,264,641—To John A. Hamilton, Tulsa, Okla. Tire shrinking machine.

1,264,827—To Eugene A. Lyman, Mount Vernon, N. Y. Demountable rim.



Among the Tire Dealers

Herbert Kemski, Waconia, Minn., has recently opened a vulcanizing plant.

G. Potts has opened a vulcanizing plant at Rochester, Minn.

Thomas McCrimmon, Wheaton, Minn., has bought the vulcanizing business of Robert Neuman.

O. E. Kron, Williston, N. D., of Williston Overland Co., has bought the Williston Auto Tire Repair Co. from S. Hansen.

A. A. Suszycki of Monango, N. D., has recently opened a vulcanizing plant.

ISSUED APRIL 30, 1918

1,263,599—To John H. Poole, Bridgewater, Mass., assignor, by direct and mesne assignments, to Ashton Hamilton, trustee, Brockton, Mass. Pneumatic-tire valve.

1,263,700—To Robert H. Porteous, Passaic, N. J. Resilient tire.

1,263,883—To Arthur H. Gruber, Evanston, Ill. Pneumatic-tire casing.

1,263,926—To John R. Reyburn, Fairfield, Conn., assignor to American Chain Co., Bridgeport, Conn. Chain tire-grip.

1,263,947—To William Shomer and Harry Friedman, Philadelphia, Pa. Composite non-inflatable tire.

1,264,060—To Morgan A. Green and Jay N. Shaver, Rupert, Idaho. Resilient tire.

1,264,127—To Joseph Pietzuch, Cincinnati, Ohio. Shoe-heel cushion.

ISSUED APRIL 30, 1918

1,264,170—To George F. Fisher, Plainfield, N. J., and Raymond B. Price, New York, N. Y., assignors to The Hartford Rubber Works Co. Tire-building machine.

1,264,193—To Harry Ward Leonard, deceased, Bronxville, N. Y., by Carolyn G. Leonard, administratrix, Bronxville, N. Y., assignor to H. Ward Leonard, Inc., a corporation of New York. Elastic belt.

1,264,199—To Dennis Macomber, Muskegon, and Leon Champion, Tallmadge, Mich. Tire for vehicle wheels.

1,264,205—To Max Cyrus Overman, New York, N. Y. Tire.

1,264,286—To Everett M. Dougherty, Milwaukee, Wis., assignor to E. J. Weaver and H. M. Uebele, Milwaukee, Wis. Holder for tire casings.

1,264,287—To Harrison H. Eaton, Beverly, Mass., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. H. Heel-support for lasts.

Incorporations

New Jersey Tire & Rubber Co., Inc., Newark, N. J.; capital, $100,000; incorporators: R. W. Martin, R. L. Noah and Louis S. Rosenblum.

Ever-Float Life Preserver Co., New York, N. Y.; capital, $5,000; incorporators: W. H. Rostford, H. B. Sexton and Charles M. Waite.

The Subers Rubber Products Co., New York, N. Y.; capital, $2,000,000; to conduct rubber plants and to manufacture rubber goods; incorporators: H. L. Smith, Frank F. Geutsch and Frank H. Townsend, all of Cleveland, Ohio.

Profit-Sharing Tire Sales Co., Inc., New York City; capital, $50,000, to deal in automobiles and to manufacture tires. Incorporators: F. B. Knowlton and P. D. Benson.

Atlantic Tire Service, New York City; capital, $10,000. Incorporators: A. Fosbay, A. G. Thaanum and A. Skillman.

Bucyrus Tire & Rubber Co., Buffalo, N. Y.; capital, $200,000. Incorporators: C. D. Henderson, P. H. Heater and G. C. Riley.

The Superior Rebuilt Tire Co., Davidson County, Tenn.; capital, $1,000. Incorporators: B. Kattler, S. Kattler and B. Frank.

C. B. Reynolds Manufacturing Co., Indianapolis, Ind.; capital, $30,000; to manufacture and sell airless tire cores. Incorporators: Charles B. Reynolds and C. D. Reynolds.

National Auto Tire Co., Chicago; capital increased from $10,000 to $50,000.

The Hodgson Tire & Supply Co. has opened quarters at Little River, Kan.

The Gates Half Sole Co., Joplin, Mo., is now styled the Akron Tire Co. The company will continue to handle acessories and supplies.

Leonard Davidson, Yates Center, Kan., has opened a vulcanizing shop on West Rutledge Street.

The Garnett Exclusive Tire & Repair Co. have moved to new quarters at Garnett, Kan.

Orsen & Hamilton, Soldier, Kan., have opened a vulcanizing establishment.

The Bakerfield Tire & Rubber Co. has opened quarters at Chesterfield Avenue, Bakersfield, Cal.

The Exeter Tire & Vulcanizing Co., Exeter, Cal., is soon to move into new quarters.

R. W. Biddlecom and O. W. Shirts have sold their vulcanizing plant in Fresno, Cal., and have opened the Biddlecom-Shirts Tire Works at 2057 Merced Street.

TIRE NEWS

Growth of the Tire Repair Business

While war time economy has given a great impetus to the tire repair business there is no doubt that the development of this industry would have been nearly as great as it is today had the war not encouraged saving.

There are between six and seven million automobiles registered in the United States. The great majority of these machines are being operated on pneumatic tires and their operation easily means more than fifty million tires and tubes in use, practically every one of which requires more or less repairing during its life.

The demand for tire repairing has grown in proportion to the rapid development of the automobile industry, and thousands of tire repair shops have been established in cities, towns and villages throughout the country. This industry is doing millions of dollars of business annually. Although the number of tire repair shops has increased immensely in the last three years it has not been possible to establish enough shops to take care of the demand, and it is estimated by a man in close touch with conditions in the trade throughout the country that there is today room for at least six thousand new tire repair shops in the United States.

One of the biggest drawbacks in the tire repair industry at the present time is the lack of business experience of many of those who have gone into it. The business end of tire repairing is important and a few suggestions for building up a profitable business in this line are not out of place.

Repairing a Tire Casing

Importance of Location

A favorable location, of course, helps a lot in building up a big business in tire repairing. Where transient trade is sought it is essential that a tire repair shop be located on a highway along which many automobiles pass. It is also very desirable that it be located at some point where motorists have a tendency to stop or to slow up, or which for some reason or another is a handy stopping place. A location near a point where automobiles are parked is also a good one. Each particular community has a somewhat different situation, and the right place to establish a tire repair shop can be determined only through careful investigation.

Portable Building Often Good

If there is no vacant store or building available in a good location, a cheap portable garage will afford a good shop to start with. Often it is possible to make a very favorable deal with the owner of vacant property who is glad to have a tire repair shop in it until he is able to sell it.

Advertising

No tire repair man should depend altogether upon business from people who know him and where he is located. All should at least hang up a sign that passing motorists can see from a long distance down the road or street from both ways. A sign can never be too good, nor can it be too big, nor painted in too bright and attractive colors.

Business Stationery

The only printed matter a tire repair shop needs are some cards, letter-heads, envelopes and bill-heads. Business cards are, of course, necessary; as are also bill-heads, for even though business may be done on a cash basis, many chauffeurs and business houses require a receipted bill to turn in and many owners desire one for reference and filing purposes. Letter-heads, although desirable, are not essential, and as for envelopes, Government stamped envelopes purchased as needed answer very well.

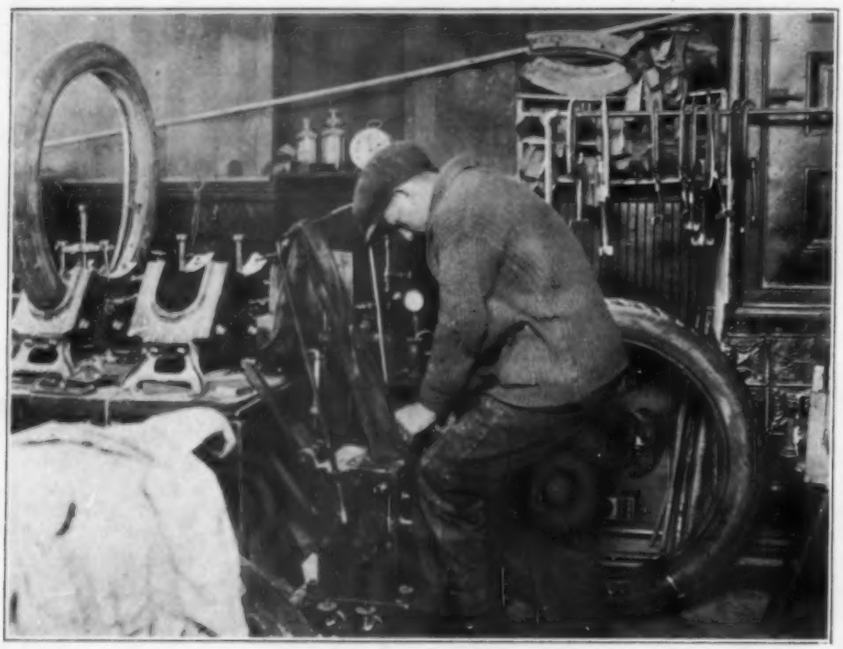
Attention to Business

The tire repair business requires constant attention. When things begin to go well, the owner of a tire repair shop should not lose his head, but keep on the job, do good work, take care of his customers and give them service. Such a policy is essential to building up a good reputation and a permanent business.

Getting More Business

A good location in itself draws a

lot of trade, but the tire repair man who builds up the big business and makes the most money is the one who is alert to every opportunity for getting more customers. There are many ways of doing this but we will only mention some suggested by the



VULCANIZING AN INNER TUBE REPAIR

Akron Rubber Mold and Machine Co., Akron, Ohio.

When a man goes into the business he should first of all see all of his friends and acquaintances who own automobiles and let them know that he has opened a shop and wants their trade and will take care of it in the right way. Every time a job is done for a new customer, a business card should be handed to him, for he will very likely refer to this card the next time he needs any tire repair work done, or it may serve as a reminder when he comes across it in his pocket or on his desk, or he may hand it to a friend with a recommendation for your shop.

The next step should be to get on friendly terms with local garages, automobile agents and salesmen, auto supply men, and others who are in a position to get business in tire repairing.

A list should be compiled of all customers and local automobile owners and from time to time a post-card or a letter should be used in reminding these people that the shop can handle all kinds of automobile tire repair work. A few hours and dollars spent evenings writing business soliciting messages will be found very profitable.

Another good way of obtaining business is to watch automobile licenses for names of new owners, and phone or write or call on them soliciting their tire repair work.

Business cards should be left in local barber shops, cigar stores, billiard rooms, the automobile club, and other places frequented by car owners. When possible, it is advisable to join the local automobile club and become acquainted with its members. It is also important to make a systematic canvass of stores and business places using light delivery cars, soliciting their tire repair work.

Another good business-getting "stunt" is to obtain testimonials from a few prominent persons who have been exceptionally pleased with repair work done for them and display these testimonials in the shop window or tack them on the wall where they will be well in view.

The greater the number of cars that visit and are in use in a district, the better the tire repairing business there. This being the case it helps a repair man's business for him to promote interest in automobiling, good roads and everything that goes to increase the use of motor vehicles in his locality.

Importance of Good Equipment

It always pays a tire repair shop to have the best equipment obtainable. It is not always necessary to have the most elaborate repairing outfit money can buy, but it is essential to have the most practical, simple and durable equipment that can take care of a good range of work. The success of a tire repairing business largely depends on the outfit and the class of work it can turn out. If a repair man starts out with a poor equipment he usually does poor work and his reputation will be spoiled.

Tire repair shops must be equipped to take care of a good range of sizes and kinds of tires, and handle both inner tube and outer casing repairs; otherwise it will lose a large part of the business offered it.

Tire Inflation and Loss of Power

Focusing attention on the amount of power lost between the engine and wheel treads of an automobile, the B. F. Goodrich Rubber Co., Akron, Ohio, has compiled an interesting set of results from experiments which it has conducted to determine the exact relation of tire pressure to the loss of power. Of the total power lost, it is shown in the Goodrich tests that the front wheels absorb 31 per cent.; the rear wheels, 30 per cent.; the front bearings, eight per cent., and the rear bearings, including transmission mechanism up to neutral gear, 30 per cent. This with tires normally inflated. With the car anchored on rollers, and revolving them with its wheels, 25 per cent. more power was required when the tires were inflated to 30 pounds pressure than when they bore 80 pounds.

The effect of underinflation on tire temperature was also shown in another test of the same series. A car with its tires inflated to only a low pressure, was run for one-half hour at the rate of 40 miles an hour. At the end of that time the tire temperature was just 39 degrees higher than when the test started. From the two tests, Goodrich points out again that fully inflated tires save themselves, save power and save gasoline.

Asbestos Protected Tires

The Perfection Tire & Rubber Co., 1002 South Michigan Boulevard, Chicago, is manufacturing and marketing a new tire, the breaker strip of which is an open asbestos weave. The object in making this strip of asbestos is said to be to enable the manufacturer to cure his tires at an unusualiy high degree of temperature without danger of injuring the cotton fabric of the tire carcass. It is claimed that the product is a tire with a very tough wearing tread, and it is also stated that a perfect union is effected between the asbestos and the rubber during the vulcanizing process, which overcomes blisters and tread separation. Where the tire fits into the wheel rims an asbestos fabric lapping bead is used. This feature, it is stated, prevents rim corrosion.

Perfection asbestos protected tires are made and are sold under a 6000-mile guarantee.

The Tire Price Situation

Other Manufacturers Follow Price-Advance Movement—Talk of Further Increases and of Government Regulation of Prices—Some Predict Shortage of Tires This Season, Others Say There Is No Such Danger—A Few Manufacturers Behind on Deliveries

Other manufacturers, following the movement started by the leading concerns, have increased their tire and tubes prices, as was forecast in the May 10 issue of THE RUBBER AGE and TIRE NEWS.

The tire trade situation today is full of contradictions. Some persons say the raising of prices was unwarranted and that any further increase should be prevented by Government action. Others have good arguments to show that the recent increase was inadequate and that a new one will have to be made in the near future. There are persons in good position to know who say that there will surely be a shortage of tires before the season is over, and there are still others who affirm that such a thing is impossible.

Regarding the possible shortage of tires this season, several tire manufacturers have stated that there is no such shortage to be feared except in the case of one or two of the most widely advertised and best known makes. The manufacturers of high grade tires at least are already far behind on deliveries and are not likely to be able to keep up to the shipping schedule they had made. However, other manufacturers—and these not small ones—have on hand very large stocks of tires.

On May 15, the Globe Rubber & Tire Manufacturing Co., New York, made a straight increase of 7½ per cent on all casing prices and 5 per cent on tubes.

On May 20, the Kelly-Springfield Tire Co., New York, advanced 6 per cent on Ford sizes—30x3 and 30x3½ casings and inner tubes, and added a straight 10 per cent to the prices of all other sizes of fabric and cord casings, inner tubes, and all solid rubber tires. On the same day the Belleville Tire & Rubber Co., Belleville, N. J., increased all its tire and tube prices 10 per cent. The prices of "Tyrian" tires, made by the Tyer Rubber Co., Andover, Mass., have also been increased since the May 10 issue of this paper went to press.

The Dayton Rubber Manufacturing Co., Dayton, Ohio, intends to increase its prices on June 1, and the Pennsylvania Rubber Co., Jeannette, Pa., is contemplating a similar move, according to its New York branch.

We are able to publish the following new price lists which supplement those published in the May 10 issue of THE RUBBER AGE and TIRE NEWS:

New Retail Tire Price Lists

Dreadnaught Tire & Rubber Co.

BALTIMORE, MD., *June 1, 1918.*

Size.	Ribbed.	Vacuum.
30x3	$18.50	$20.70
30x3½	22.80	24.90
31x3½	24.80	26.90
32x3½	27.50	29.90
31x4	33.70	38.15
32x4	35.75	38.85
33x4	36.80	40.80
34x4	37.90	42.50
36x4	41.70	46.30
33x4½	47.90	54.40
34x4½	49.50	55.35
35x4½	51.75	56.60
36x4½	53.75	58.75
37x4½	55.85	62.50
35x5	59.50	68.55
36x5	61.80	70.40
37x5	63.50	71.85

Globe Rubber & Tire Mfg. Co.

NEW YORK, *May 15, 1918.*

Size.	Plain Tread.	Non-Skid.	Tubes.—Red.	Tubes.—Gray.
28x3	....	....	$3.70	$3.20
30x3	$21.05	$23.95	3.85	3.40
32x3	....	....	4.15	3.70
29x3½	....	....	4.40	3.95
30x3½	27.35	30.25	4.45	4.05
31x3½	30.25	33.05	4.70	4.15
32x3½	31.10	34.90	4.75	4.20
34x3½	33.85	38.95	5.00	4.40
34x3½ S.S.	33.85	39.00	....	....
30x4	....	....	6.15	5.40
31x4	37.10	40.95	6.25	5.60
32x4	37.50	41.65	6.45	5.70
33x4	39.35	43.50	6.70	5.95
34x4	41.25	44.30	6.85	6.05
35x4	41.65	46.10	6.95	6.20
36x4	42.60	46.50	7.20	6.35
32x4½	47.05	51.05	8.15	7.25
33x4½ S.S.	49.05	54.60	8.25	7.30
34x4½	50.80	57.05	8.40	7.45
35x4½	52.35	60.35	8.50	7.55
36x4½	53.85	64.00	8.75	7.80
37x4½	55.35	66.20	8.95	7.90
34x5	....	....	9.75	8.75
35x5	62.15	71.50	9.95	8.95
36x5	64.20	72.95	10.30	9.10
37x5	65.70	78.05	10.40	9.25
37x5½	85.45	97.45	11.55	10.30
38x5½	87.20	104.55	11.75	10.50

Goodyear Tire & Rubber Co.

AKRON, OHIO, *April 23, 1918.*

Size.	Fabric.—Smooth Tread.	Fabric.—All-Weather Tread.	Cord.—Ribbed Tread.	Cord.—All-Weather Tread.	Tubes.—Regular.	Tubes.—Heavy Tour-ist.
30x3	$15.80	$18.50	....	....	$3.35	$4.35
30x3½	20.05	23.50	38.70	41.65	3.90	4.95
31x3½	21.55	25.80	....	....	4.00	....
32x3½	23.50	27.45	41.35	44.50	4.20	5.45
34x3½	....	31.20	....	....	4.60	....
31x4	31.30	36.55	50.80	54.60	5.40	7.05
32x4	31.95	37.40	52.65	56.55	5.55	7.25
33x4	33.50	38.25	54.00	58.00	5.80	7.45
34x4	34.30	40.10	55.50	59.60	5.90	7.65
35x4	....	41.90	....	....	6.00	....
36x4	....	42.55	....	....	6.15	....
32x4½	42.75	50.00	59.30	63.70	7.15	9.30
33x4½	44.05	51.60	60.85	65.35	7.30	9.45
34x4½	45.50	53.25	62.40	67.05	7.40	9.60
35x4½	47.65	55.65	63.95	68.75	7.50	9.75
33x4½	48.35	56.50	65.45	70.35	7.65	9.85
37x4½	....	59.00	....	....	7.85	....
33x5	52.70	61.65	74.05	79.55	8.65	11.20
35x5	55.80	65.35	77.65	83.40	8.95	11.55
36x5	....	66.35	....	....	9.15	11.80
37x5	....	69.25	81.30	87.40	9.30	12.05
38x5½	....	....	98.60	105.95	....	13.10

Knight Tire & Rubber Co.

CANTON, OHIO, *May 1, 1918.*

Size.	Casings.	Tubes.
30x3	$17.45	$3.40
30x3½	22.25	3.95
31x3½	23.70	4.15
32x3½	26.25	4.20
34x3½	....	4.45
31x4	35.05	5.30
32x4	35.65	5.45
33x4	37.70	5.60
34x4	38.35	5.85
36x4	41.05	6.10
32x4½	....	6.95
33x4½	46.35	7.00
34x4½	46.75	7.05
35x4½	48.60	7.25
36x4½	49.20	7.35
35x5	59.95	8.55
36x5	....	8.70
37x5	63.10	8.85
37x5½	....	11.55
38x5½	....	13.20

Kelly-Springfield Tire Co.

NEW YORK, *May 20, 1918.*

Size.	Fabric Tires.—Plain Tread.	Bailey Tread.	Driving Tread.	Kant Slip Tread.	Cord Tires.—Gro'v'd Tread.	Block & Button Tread.
28x3	....	....	....	$29.50	....	....
30x3	$22.15	$23.10	....	26.35	....	....
32x3	....	....	....	29.50	....	....
30x3½	26.85	29.95	....	32.95	....	....
31x3½	29.75	....	....	34.10	....	....
32x3½	31.55	....	....	37.65	....	....
34x3½	....	....	....	43.10	....	....
30x4	....	....	....	43.10	....	....
31x4	37.85	....	$42.55	45.40	....	....
32x4	....	....	43.70	49.50	....	....
33x4	....	....	44.95	51.00	....	....
34x4	....	....	46.20	52.75	....	....
35x4	....	....	52.50	....	....	....
36x4	....	....	56.00	59.00	....	....
37x4	....	....	60.00	....	....	....
32x4½	....	....	51.45	57.40	$68.75	$72.50
33x4½	....	....	53.45	59.65	69.55	73.75
34x4½	....	....	55.45	61.80	72.85	76.25
35x4½	....	....	58.05	65.50	74.75	78.20
36x4½	....	....	63.95	71.10	76.00	79.90
37x4½	....	....	72.30	75.60	....	....
35x5	....	....	72.20	80.90	88.55	93.50
36x5	....	....	75.55	84.05	....	....
37x5	....	....	76.95	86.05	90.25	95.00
36x5½	....	....	105.05	117.60	....	....
37x5½	....	....	....	120.00	....	....
38x5½	....	....	111.65	124.50	....	....
39x6	....	....	....	147.80	....	....

RED TUBES

Size.		Size.	
28x3	$4.05	37x4	$7.95
30x3	4.25	32x4½	8.65
32x3	4.40	33x4½	8.95
30x3½	4.45	34x4½	9.20
30x3½	5.35	35x4½	9.40
31x3½	5.50	36x4½	9.75
32x3½	5.70	37x4½	10.05
34x3½	6.05	35x5	11.05
30x4	6.60	36x5	11.25
31x4	6.70	37x5	11.70
32x4	6.85	36x5½	13.00
33x4	7.10	37x5½	13.35
34x4	7.40	38x5½	13.60
35x4	7.50	39x6	16.25
36x4	7.65		

United States Tire Co.

NEW YORK, *April 23, 1918.*

Size.	Plain Tread.	Usco Tread.	Chain Tread.	Nobby Tread.	Royal Cord.
28x3	$14.00	$14.70	$16.40	$21.70	....
30x3	15.20	15.95	18.05	....	....
32x3	17.60	18.50	20.80	29.60	....
30x3½	19.75	20.70	23.50	....	....
31x3½	20.75	21.80	24.70	....	....
32x3½	22.90	24.05	27.00	22.10	43.40
34x3½	....	....	....	45.00	....
28x4	....	33.85	....	....	....
31x4	30.20	31.70	39.60	40.00	....
32x4	30.85	32.40	37.55	40.80	55.15
33x4	32.25	33.90	39.50	42.85	56.55
34x4	33.05	34.65	40.40	43.65	58.15
35x4	37.80	39.65	46.20	52.00	....
36x4	38.35	40.25	46.75	56.00	....
32x4½	41.80	43.90	50.50	53.60	61.95
33x4½	43.05	45.20	51.85	55.20	63.75
34x4½	44.45	46.70	54.65	57.10	65.55
35x4½	46.50	48.80	56.05	59.65	65.55
36x4½	47.20	49.55	56.85	60.50	68.65
37x4½	53.65	56.35	64.75	75.70	....
33x5	....	....	....	....	77.80
35x5	53.05	55.65	63.65	70.20	81.35
36x5	58.75	61.70	70.70	78.95	90.90
37x5	56.20	59.10	67.40	74.30	85.15
36x5½	....	....	....	....	111.80
37x5½	80.35	....	95.60	102.70	....
38x5½	88.10	....	....	105.00	113.00

TUBES

Size.	Gray.	Red.
28x3	$3.15	$4.00
30x3	3.30	4.10
32x3	3.45	4.40
30x3½	4.15	5.10
31x3½	4.25	5.30
32x3½	4.40	5.40
34x3½	4.75	5.90
28x4	4.85	6.10
31x4	5.35	6.60
32x4	5.50	6.65
33x4	5.65	6.75
34x4	5.75	6.85
35x4	6.00	7.20
36x4	6.20	7.30
32x4½	6.75	8.70
33x4½	7.05	8.80
34x4½	7.10	8.90
35x4½	7.25	9.05
36x4½	7.55	9.25
37x4½	7.80	9.35
33x5	8.45	10.10
35x5	8.80	10.60
36x5	8.95	10.90
37x5	9.15	11.10
36x5½	10.05	12.05
37x5½	10.20	12.20
38x5½	10.35	12.35

Keystone Tire & Rubber Co.

NEW YORK, *April 22, 1918.*

Size.	Non-Skid.	Tubes. Gray.	Tubes. Red.
30x3	$18.50	$3.20	$3.95
30x3½	23.50	3.80	4.60
32x3½	27.45	4.20	5.00
31x4	36.65	5.20	6.25
32x4	37.40	5.35	6.40
33x4	39.30	5.55	6.65
34x4	40.10	5.65	6.80
34x4½	53.25	7.15	8.75
35x4½	55.65	7.35	9.00
36x4½	56.50	7.65	9.25
35x5	65.35	8.75	9.90
37x5	69.25	9.05	10.35

National Rubber Co. of N. Y.

PHILADELPHIA, PA., *May 1, 1918.*

Size.	Non-Skid.	Red Tubes.
28x3	....	$4.33
30x3	$20.00	4.46
30x3½	24.65	5.66
31x3½	....	6.00
32x3½	32.00	6.33
34x3½	40.00	6.66
30x4	....	6.98
31x4	37.35	7.33
32x4	38.65	7.66
33x4	40.00	8.00
34x4	41.35	8.33
35x4	....	8.66
36x4	44.00	9.00
37x4	....	9.33
33x4½	53.35	9.69
34x4½	54.35	9.85
35x4½	56.00	10.08
36x4½	57.35	10.40
37x4½	60.00	10.77
35x5	69.35	12.00
36x5	72.00	12.66
37x5	73.35	13.33
39x5	....	14.66
37x5½	....	14.66
38x5½	....	15.33

Star Rubber Co.

AKRON, OHIO, *March 1, 1918.*

Size.	Ribbed Tread.	Non-Skid.	Tubes. Red.	Tubes. Gray.
30x3	$22.00	$24.00	$3.65	$3.20
30x3½	26.50	29.00	4.70	3.85
31x3½	28.40	....	4.90	...
32x3½	30.45	32.10	5.10	4.05
34x3½	....	....	5.40	...
31x4	37.50	39.70	5.95	5.10
32x4	39.20	41.00	6.10	5.20
33x4	40.50	42.25	6.30	5.35
34x4	41.75	43.70	6.46	5.50
35x4	....	....	6.65	...
36x4	....	46.40	6.80	...
32x4½	51.90	53.25	7.60	...
33x4½	53.65	55.00	7.80	...
34x4½	55.30	56.70	8.00	6.55
35x4½	57.20	58.50	8.20	6.80
36x4½	59.00	60.25	8.45	7.00
35x5	68.00	70.00	9.45	...
36x5	71.10	72.50	9.65	...
37x5	72.25	75.00	10.00	...
36x5½	....	....	11.50	...
37x5½	90.00	93.00	11.60	...
38x5½	....	96.50	11.65	...

Tyer Rubber Co.

ANDOVER, MASS. *April 4, 1918.*

Size.	Plain.	Non-Skid.	Red. Tubes.
28x3	$16.10	$17.55	$4.00
30x3	18.00	19.50	4.20
32x3	19.80	21.20	4.35
30x3½	22.50	24.90	4.80
31x3½	23.80	26.15	4.90
32x3½	25.95	28.25	4.95
33x3½	28.20	30.50	5.20
34x3½	29.40	31.70	5.40
30x4	32.65	35.80	6.30
31x4	34.45	37.50	6.50
32x4	35.30	38.30	6.65
33x4	37.00	40.10	6.90
34x4	37.85	40.85	7.00
35x4	39.55	42.65	7.20
36x4	40.20	43.25	7.50
32x4½	45.80	49.60	8.70
33x4½	48.05	51.90	8.85
34x4½	50.30	54.15	9.00
35x4½	52.55	56.40	9.25
36x4½	53.30	57.10	9.50
37x4½	55.50	59.35	9.65
35x5	58.50	62.45	10.90
36x5	58.45	63.30	11.40
37x5	62.15	66.00	11.55
37x5½	83.05	89.90	12.75
38x5½	85.60	92.55	12.95

Tire Plant in Muskegon

The Sectional Tire & Rubber Co., a $50,000 corporation recently organized, is now reported to be establishing a plant in Muskegon, Mich., with G. W. Kitterman, a former Chicago manufacturer, as manager of the factory.

Important Happenings in the Tire Industry

New Tire Size Schedule Approved—Firestone Separates Rim Division—No Specified Automobile Curtailment—Amazon Declares Dividend—Marathon Adds to Factory—Goodell Is in South America

New Tire Size Schedule Approved

Automobile manufacturers, through the National Automobile Chamber of Commerce, have formally approved the schedule of nine standard sizes of pneumatic tires drawn up by the War Service Committee of the Rubber Industry of the U. S. A. These nine sizes, including 30x3½, 31x4, 32x3½, 33x4, 34x4½, 35x5, 36x6, 38x7 and 40x8, are to be used in equipping all passenger and commercial motor vehicles up to two tons capacity.

The suggestion that the number of sizes be reduced to these nine standard sizes from more than 200 sizes, which now are made, came originally from the Commercial Economy Board of the Council of National Defense. Car manufacturers have been asked to use only these sizes on cars produced after July 31, 1918. The complete adoption of the schedule eventually will mean a great reduction in the number and size of tires which must be produced by manufacturers and carried in stock by dealers. In addition to eliminating about 100 sizes, the schedule also does away with all styles of beads except clincher, which is used for only the 30x3½ and 31x4, and straight-side, which is used for every other size. Quick detachable and Q. D. clincher types of tire casings are eliminated.

Firestone Separates Rim Division

As a matter of operating economy and efficiency, the Firestone Tire & Rubber Co., Akron, Ohio, is separating its rim manufacturing division from the tire and rubber company, so that the rim plant may be entirely in the hands of skilled steel men. The Firestone Steel Products Co. is being formed to take over the rim end of the business.

The stock of the new company will all, except directors' qualifying shares, be owned by the Firestone Tire & Rubber Co. J. G. Swayne, present manager of the rim plant, will be vice-president and general manager of the new company, and present officers and directors of the rubber company will have leading places in the new concern.

It is stated that the Firestone rim plant uses 30,000 tons of steel a month.

Amazon Declares Dividend

A quarterly dividend of 1½ per cent has been declared on the common stock of the Amazon Rubber Co., Akron, Ohio.

This company is one of the fastest growing of Akron's younger rubber companies and has already secured national distribution of its product.

The factory in Akron has been running day and night, turning out about two hundred and fifty tires daily.

Sales in excess of $1,000,000 are anticipated for this season.

Goodrich Annual Motor Truck Book

The 1918 edition of the annual motor truck book, "Motor Trucks of America," published by The B. F. Goodrich Co., Akron, Ohio, is now ready for distribution through the company's branches. This book will be found useful by truck manufacturers, their agents and salesmen, as well as the prospective buyer of trucks. The photographs and specifications shown are furnished, checked and approved by manufacturers and are arranged to permit easy comparison of the details of the several makes of motor trucks.

No Specified Automobile Curtailment

There will be no specified curtailment of the automobile industry. Automobile manufacturers have agreed with the Government officials that war needs demand 100 per cent. priorty on steel and other materials required for the manufacture of munitions. The committee representing the automobile industry and composed of W. C. Durant, General Motors Co.; John Willys, Willys-Overland Co.; John Dodge, Dodge Bros.; and Walter Flanders, Maxwell Motor Co., has completed negotiations with the War Industries Board with the understanding that the Government will take steel and whatever other materials it needs up to 100 per cent. and the automobile manufacturers will arrange their programs accordingly. They will share the steel that is left over pro rata with other non-war manufacturers. Each company has been advised by the committee to consider its production and program problems in view of this arrangement.

The committee was informed by the War Industries Board that there had been no official attempt to set the curtailment to 75 per cent., as had been indicated by certain newspaper despatches. The War Industries Committee denied all responsibility for this statement.

The plan adopted appears to be considered by far the best by all concerned. It prevents all hysteria and panic in the industry, and especially among the 27,000 dealers; it gives the Government all of the material it needs, yet it allows the automobile industry to run up to normal production as speedily as the shortage situation clears up.

F. R. Goodell in South America

F. R. Goodell, selling agent for the Converse Rubber Shoe Co., 142 Duane street, New York City, and a well known figure in the rubber trade, has left for a trip through South America, stopping in Brazil, Uruguay, and Argentina. The Converse Rubber Shoe Co., Malden, Mass., felt that here is a fertile field for the development of American manufactured goods, and the object of Mr. Goodell's trip is to promote the sale of his company's products in these countries.

Marathon Adds to Factory

The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio, has completed the addition of a large moulded goods and specialty department to its factory.

In addition to rubber specialties, the Marathon company is now manufacturing large quantities of rubber heels and composition soles, this business having developed into a big department in less than two years.

M. J. Wilcox at Naval Station

Mahlon J. Wilcox, manager of the Fort Wayne, Ind., branch of the Fisk Rubber Co., has received an appointment as tire expert at the Great Lakes Naval Training Station. Mr. Wilcox was connected with the Fisk Company for eleven years, and for the last six years has been at Fort Wayne.

Kokomo Rubber Co. Leases Property

The Kokomo Rubber Co., of Kokomo, Ind., has leased the property at 201 Hogan Street, Jacksonville, Fla. J. Goldberg was the representative of the company.

MARKETS

Manufactured Rubber Goods

NEW YORK, May 24, 1918.

Business in the rubber trade continues good. The weather for the last three weeks has been excellent for the distribution of spring and summer goods. Prices are firm and business is progressing smoothly since freight conditions have improved and the crude rubber situation has been settled, for the time being at least. Collections are said to be good and both wholesalers and retailers are buying for legitimate requirements. The Federal Government has suggested the cutting out of unnecessary kinds and sizes of goods and many manufacturers find that they can easily drop quite a number of articles without real inconvenience to their customers.

Rubber manufacturers' salesmen report few complaints from retailers as to prices. The trade has become accustomed to advances and accepts them as a matter of course. The effect of increasing prices is to cause merchants to buy less liberally and with greater caution, though they do not anticipate price declines in the near future. The retail trade is now taking smaller lines and less variety than usual. This makes business easier for all concerned for there are now fewer articles of the same or similar character to deal with. The factories are not as ready as in normal times to make odd or special goods. Retail rubber goods salesmen say that the average customer today is willing to take the nearest to what he asked for if the article is necessary and will serve his purpose.

Articles of merchandise relating to war work, directly or indirectly, are growing rapidly in demand, and no doubt there will be a shortage of articles of minimum importance to the war before the season is over.

MECHANICAL GOODS

There are a few complaints of slackness in the mechanical rubber goods trade, but generally speaking manufacturers of this class of articles are satisfied and say that the jobbing trade is not falling off much. Little building is being done and this, of course, means a decrease in the sales of many articles belonging to the mechanical rubber goods classification. Insulated wire business, for instance, is very slack; luckily wire insulators are busy on Government work and do not feel this falling off in their regular business as they would in normal times.

Under existing conditions practically everything in the mechanical rubber goods line must become more scarce during the next six months than during any other period since the war started. While these conditions prevail it is evident that values cannot decline except by Government regulation, and if there are any changes they must be in the nature of advances. Dealers in mechanical rubber goods are not advised to speculate in these, but it is fair that they should know that there seems to be little chance for any decline this summer or fall.

GARDEN HOSE

Reports from different parts of the country show that garden hose is not moving as fast this year as could have been expected in view of garden work which has been for some time an all-absorbing topic. Dealers in many suburban districts are at a loss to explain the lack of interest in hose compared with the business being done in garden tools. Manufacturers are not turning out garden hose in anything like usual quantities; most of them report that they have good stocks on hand, but that little business in the way of repeat orders is, as yet, coming in.

TIRES

The cutting down of the production of automobiles has not as yet had any apparent effect on retail sales of tires and accessories. Many motorists who contemplated buying new cars this year will continue to use their old ones, but they will continue motoring. The new demand for tires is heavy, and there is some talk of another general advance in tire prices and of a possible shortage of tires. On another hand there have been reports of the Government's intention to regulate tire prices and bring them back to where they were before the recent raise. However, these reports lack confirmation, and, though the Government may take steps to prevent a further increase in tire prices, it is not likely that there will be any action taken regarding the recent raise. The tire price situation is subject of a story elsewhere in this issue.

FOOTWEAR

The rubber footwear situation remains unchanged and the positions of jobbers in this trade is peculiar. Their stocks are small and will disappear rapidly when the season opens, yet they are helpless and see little prospect of replenishing their stocks and getting them into normal condition. Retail stores are more or less in the same condition.

DRUGGISTS' SUNDRIES

There is little to say about the druggists' sundries trade at this time. Matters are quiet in the manufacturing and wholesale end just as they usually are at this season of the year. The only feature is that manufacturers are busy on Government work and expect to be delayed in many instances in getting back to regular manufacturing. In the retail end of the trade, business in bathing caps and various specialties is much better than was expected.

Cotton Yarn and Fabric

NEW YORK, MAY 24, 1918.

The closing week of May finds the raw cotton market in a very unsettled condition with each day bringing new developments which tend to weaken the market. The general trend of prices on the New York Cotton Exchange is downward, the drop since May 10 amounting to more than 300 points, and still further decreases threatened.

The news that the United States army is to be expanded to 5,000,000 men, with a resultant heavier demand on ocean tonnage, indicates that export shipments of cotton will be further seriously curtailed. There is a report that $70,000,000 worth of cotton sold for export is waiting shipment in Texas. This cotton cannot be shipped until the shipping situation eases up, and there is no immediate prospect of this.

The demand for cotton by manufacturers has fallen off some during the past few weeks, and apparently the consumers are waiting further developments before going into the market for their materials. Although the market may rally some, it is the general opinion that still further declines may be expected.

EGYPTIAN COTTON

There have been no recent arrivals of Egyptian cotton in the United States reported, although despatches from Boston say that it is not altogether improbable that another cargo may arrive at any time. However, the urgent need for ships for more important purposes has practically cut off this country from importations of the Egyptian product.

It is reported in the trade that bad weather has spoiled the new Egyptian cotton crop to a certain degree, but just exactly what damage has been caused is not known. The new crop and the remainder of the old crop will be taken over in August by the British and Egyptian governments.

SEA ISLAND COTTON

Trading in Sea Island cotton is rather quiet, with average extra choice quoted at between 70@75 cents. Dealers report that there is little business being done in Sea Island.

FABRICS

Government needs continue to absorb the bulk of the output of fabrics, and the market is very firm, with advances recorded nearly every day. Shortages in raw materials and a shortage of labor in the factories is one of the causes of the shortage of goods and the prevailing high prices. The Government has fixed prices for the 1918 wool clip and reserves the right to acquire any or all of the output at prices determined by the War Industries Board. It has also been further ruled that the entire clip must be distributed through approved dealers and approved centers of distribution.

TIRE FABRICS

The tire fabrics market is quiet, with dealers reporting a steady demand, and

the market holding firmly. The price on 17¼-ounce combed Sea Island cotton is $1.70 per square yard. Combed Egyptian of the 17¼-ounce fabric is quoted at $1.40 per square yard, carded Egyptian at $1.20, carded peelers at $1.10, and combed peelers at $1.15.

HOSE AND BELTING FABRICS

Government requirements are taking practically the entire output of mechanical ducks, and rubber manufacturers are reported to experience considerable difficulty in getting enough goods for their needs. The mill production of ducks for civilian account has almost entirely ceased, and in some cases it is necessary for prospective purchasers of ducks to get permission from the Government before sales can be made to them. In view of the unsettled conditions, dealers say, ducks are unquotable for the present.

DRILLS, OSNABURGS AND SHEETINGS

The demand for these fabrics continues strong, and the market is firm, with frequent advances in prices reported. The demand exceeds the supply and it is very difficult to get many of the fabrics, especially the heavier grades. The prices of the finished fabrics are no longer regulated by the price on raw cotton, and for this reason there is much complaint heard because of the high prices. However, the needs of the Government for uniform cloths and other clothing must come first, and a great number of looms have been given over to Government work, with the probability that more will be turned over as the increasing of the armed forces of the United States automatically make the demand for more supplies heavier.

New York Quotations

TIRE FABRICS

17¼-ounce Sea Island, combed,	sq. yd.	$1.70@	—
17¼-ounce Egyptian, combed		1.40@	—
17¼-ounce Egyptian, carded		1.20@	—
17¼-ounce Peelers, carded		1.10@	—
17¼-ounce Peelers, combed		1.15@	—

DUCKS

Single Filling (pound basis)	lb.	—
Double Filling (pound basis)		—

DRILLS

37-inch	2.35-yard	yd.	.35
37-inch	2.75-yard		.30
37-inch	3.00-yard		.29
37-inch	3.25-yard		.26
37-inch	3.50-yard		.25
37-inch	3.95-yard		.22½
37-inch	2.00-yard Southern	lb.	.75
38-inch	2.00-yard Northern		—
40-inch	2.47-yard Northern	yd.	.35
40-inch	2.47-yard Northern		—
52-inch	1.90-yard Southern		.40
52-inch	1.90-yard Northern		.40

SHEETINGS

40-inch	2.35-yard	yd.	.32
40-inch	2.50-yard		.34
40-inch	2.85-yard		.31
40-inch	3.00-yard		.29
40-inch	3.25-yard		.28
40-inch	3.75-yard		.23½
40-inch	3.60-yard		.26
40-inch	4.25-yard		.21½
38-inch	Jacket Cloths	yd.	.21@23

BURLAPS

(Spot Carload Lots)

40-inch	8 -ounce		19.25
40-inch	10 -ounce		23.25
40-inch	10½-ounce		23.50

Chemicals and Compounding Materials

NEW YORK, MAY 24, 1918.

Interest centered in the new Government regulations restricting the importation of crude rubber. The effect of curtailed imports may not be felt for some time, according to traders, but it is generally conceded that consumption of chemicals and compounding materials will, ultimately, receive a setback. Trading in the last fortnight was inactive, but prices, taken as a whole, ruled firm. A feature in the market was the stronger position of dry colors, spot offerings of which were rather light in some instances. Caustic soda developed slight weakness, but actual price changes were unimportant. Producers of corn starch are well sold up and prices for spot goods are little more than nominal. A firm market was reported for aniline oil. Corn oil closed higher.

ANTIMONY SULPHURETS

Easier prices obtained for antimony metal, but this had no influence upon the market for sulphurets. Quotations at the close were steady on the basis of 25@27 cents per pound for the red. Delieveries against old contracts were up to normal.

ANILINE OIL

There was a better demand for aniline oil and prominent producers reported sales on the basis of 27 cents per pound, drums extra, immediate shipment. On contract it was possible to do 26½ cents per pound, drums extra.

DRY COLORS

A good inquiry was in evidence for spot material and as actual offerings were limited a firmer feeling prevailed towards the close. Soluble blues were raised to $1.15 to $1.30 per pound. Ultramarine blues were wholly nominal, production being well sold up. Blacks also were strong. English vermillion held at $2 to $2.10 per pound, despite lower prices for quicksilver.

OILS

Offerings of rapessed oil for spot delivery are light and prices of $1.75 to $1.80 per gallon for the refined grade are nominal. Crude corn oil has been advanced to 16¾@17 cents per pound, in barrels, car-lots. Linseed oil is firm on the spot at $1.56@$1.57 per gallon, but on futures as low as $1.50 could have been done.

ZINC OXIDE

Contract prices for American process zinc oxide are holding on the basis of 10¼ cents per pound. For spot material nominal quotations range from 13 to 14 cents per pound.

Prices Current for Chemicals, Fillers, Colors, etc.

Acetone	lb.	*.25½	@	.26
Accelerator, in drums	lb.	.85	@	1.00
Acids, Acetic, 56%	lb.	.14	@	.15
Carbolic, C. P.	lb.	.50	@	.55
Cresylic, 95%	gal.	1.15	@	1.20
Muriatic, 20 deg.	lb.	.02¼	@	.02½
Acids, Muriatic, 22 deg.	lb.	.02¾	@	.03
Nitric, 42 deg.	lb.	.09¾	@	.10
Nitric, 40 deg.	lb.	.09	@	.09¼
Sulphuric, 60 deg.	lb.	.01½	@	.02
Tartaric, crystals	lb.	.87	@	.89
Aluminum Flake	ton	28.00	@	30.00
Aniline oil, bulk basis	lb.	.27	@	.27½
Antimony, metal spot	lb.	12.00	@	12.25
Oxide	lb.	15.00	@	17.00
Sulphuret, red	lb.	.25	@	.26
Sulphuret, golden	lb.	.26	@	.28
Sulphuret, crimson	lb.	.45	@	.50
Asbestos	ton	35.00	@	45.00
Asphaltum, Egyptian	lb.	.25	@	.30
Domestic	ton	22.00	@	28.00
Barium sulphate, technical	lb.	.04½	@	.05
Sulphide	lb.	.07¼	@	.07½
Barytes, prime white imported	ton	*40.00	@	45.00
white, domestic	ton	36.00	@	38.00
off color, domestic	ton	23.00	@	26.00
Benzol, pure, bulk	gal.	.30	@	.35
Beta-naphthol, sublimed	lb.	.85	@	.90
unsublimed	lb.	.65	@	.70
Blacks, Drop	lb.	.08	@	.15
Ivory	lb.	.16	@	.30
Carbon gas, cases	lb.	.22	@	.30
Lampblack, R. M.	lb.	.14	@	.16
Mineral blacks	ton	28.00	@	32.00
Blues, Prussian	lb.	1.10	@	1.30
Soluble	lb.	1.15	@	1.35
Ultramarine	lb.	*20	@	.45
Browns, Umber, Turkey, burnt, powdered	lb.	.04	@	.07
American, burnt	lb.	.03½	@	.03¾
Cadmium sulphide, yellow	lb.	2.00	@	2.25
Carbon, bisulphide, bulk	lb.	.08¼	@	.08½
tetrachloride, drums	lb.	.15½	@	.16
Caustic Soda, 76@78%	lb.	.04¾	@	.04½
Chalk, precipitated, extra light	lb.	.05	@	.05¾
light	lb.	.04¾	@	.05¼
heavy	lb.	.03¾	@	.04¼
China clay, domestic	ton	20.00	@	23.00
imported	ton	*38.00	@	42.00
Fossil flour	lb.	.03¾	@	.05
Gilsonite	ton	55.00	@	60.00
Glue, extra white	lb.	.65	@	.75
medium	lb.	.28	@	.34
low grade		.17	@	.22
Glycerine, C. P. (drums)	lb.	.63½	@	.65
Graphite, flake (bbl.)	lb.	.18	@	.20
powdered (bbl.)	lb.	.13	@	.15
Green, chrome, R. M.	lb.	.14	@	.20
Ground glass (fine)	lb.	.03½	@	.04
Hexamethylene	lb.	1.10	@	1.15
Infusorial earth, powd'd.	ton	60.00	@	—
bolted	ton	70.00	@	—
Iron oxide, red, reduced grades	lb.	.05	@	.06
red, pure, bright	lb.	.12	@	.15
Lead, red oxide of	lb.	.10	@	.10½
sublimed blue	lb.	.08½	@	.09
white, basic carb.	lb.	.09	@	.09½
white basic sulph.	lb.	.08½	@	.09
Lime flour	lb.	.01½	@	.01¾
Litharge	lb.	.09½	@	.10
English	lb.	*.12	@	.13
sublimed	lb.	.09¼	@	.09¾
Lithopone, domestic	lb.	.07	@	.07½
Magnesia, carbonate	lb.	.12½	@	.13½
calcined, heavy	lb.	.12	@	—
calcined, light	lb.	.70	@	—
Magnesite, calcined, pwd.	ton	65.00	@	70.00
Mica, powdered	lb.	.03¾	@	.04¾
Mineral rubber (asphaltum base)	ton	80.00	@	115.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.24	@	—
68 @ 70 degrees (steel bbls.)	gal.	.30	@	—
70 @ 72 degrees (steel bbls.)	gal.	.31	@	—
73 @ 76 degrees (steel bbls.)	gal.	.33	@	—
machine (wood bbls.)	gal.	.42	@	—
Oil corn, crude	cwt.	16.75	@	17.00
corn, refined	cwt.	20.72	@	20.92
linseed (bbl.)	gal.	1.56	@	1.57
palm, Lagos	lb.	*.39	@	.40
pine, yellow	gal.	.43	@	.45
rapeseed, refined	gal.	*1.78	@	1.88
rapeseed, blown	gal.	*1.90	@	2.00
rosin, first rectified	gal.	.40	@	.42
tar (commercial)	gal.	.30	@	.32
Orange mineral, American	lb.	.13	@	.13½
imported	lb.	*.15	@	.20
Paraphenylenediamine	lb.	3.00	@	3.50
Petrolatum, bbls., amber	lb.	.05½	@	.05¾
pale yellow	lb.	.05¾	@	.06
Pine tar, kiln	bbl.	11.50	@	12.00
Pitch	bbl.	4.25	@	4.75
Plaster of paris	bbl.	2.00	@	2.50
Red, Tuscan	lb.	.25	@	.32
Indian (reduced)	lb.	.07	@	.09
Standard	lb.	.10	@	.15
Rosin (common to good) @ 280 lbs.	bbl.	8.00	@	8.20
Rotten stone, powdered	lb.	.03¼	@	.04½
Rubber, substitute, black	lb.	.13	@	.17
white	lb.	.15	@	.24
brown	lb.	.20	@	.25
Shellac, fine orange	lb.	.68	@	.69
T. N.	lb.	.63	@	—
Bleached ordinary	lb.	.60	@	.61
Bleached bonedry	lb.	.71	@	..
Silex (silica)	ton	28.00	@	36.00
Soapstone, powdered	ton	18.00	@	22.00
Starch, corn, powdered	lb.	4.50	@	4.80
Sulphur, crude	ton	*50.00	@	..
refined, flour, per 100-pounds, in bbls.		3.85	@	4.40
roll		3.70	@	4.15
commercial		3.25	@	3.50
Talc, American	ton	16.00	@	18.00
French	ton	*30.00	@	35.00
Toluol, pure, in drums	gal.	*1.75	@	2.00
Tripolite earth	ton	60.00	@	70.00
Turpentine, pure gum—spirits	gal.	.52	@	.52½
wood	gal.	.50	@	.50½
Venice, artificial	gal.	.12	@	.13
Vermillion, English	lb.	2.00	@	2.10
Wax, beeswax, crude yel.	lb.	.35	@	.37
ceresin, white	lb.	.18	@	.19
carnauba, No. 3	lb.	*.75	@	.77
Wax, Montan	lb.	*.35	@	.40
ozokerite, black	lb.	.75	@	.80
ozokerite, green	lb.	*.85	@	.95
Paraffin, refined, 118/120 M. P. (bbls.)	lb.	.12½	@	.13
Wax, Paraffin, 123/125 M. P.	lb.	.12¾	@	.13¼
128/130 M.P.	lb.	.13	@	.13½
133/136 M.P.	lb.	.14¾	@	.15¼
Crude, 120/122 M.P.	lb.	.10	@	.10¼
124/126 M.P.	lb.	.10¼	@	.10½
Whiting, commercial	cft.	1.00	@	1.10
Alba	cwt.	1.00	@	—
Whiting, Paris, white, American	cwt.	1.25	@	—
English cliffstone	cwt.	1.50	@	—
Yellow chrome	lb.	.24	@	.30
Zinc oxide, American process, horsehead brand	lb.	†.10¼	@	.10½
selected	lb.	†.10¾	@	.11
"XX red"	lb.	†.10¼	@	.10½
French process, green seal	lb.	†.13½	@	.13¾
red seal	lb.	†.13	@	.13¼
white seal	lb.	†.14	@	.14¼
Zinc substitutes	ton	35.00	@	40.00
Zinc, sulphide, pure	lb.	*.08	@	—

*Nominal †Contract prices.

Crude Rubber

May 24, 1918.

Maximum prices on the intermediate and lower grades of crude rubber have been established by the War Trade Board. The new prices are practically as predicted, being based upon what the trade has for some time past considered a fair differential, contrasted with the standard descriptions. Maximum prices on some of the more important intermediate grades follow:

	Cents.
Plantations:	
Off standard pale crepe	62
Off color latex	61
No. 1 Amber crepe	60
No. 2 Amber crepe	60
No. 3 Amber, medium col	58
No. 4 Amber, darkish col	57
Medium col. light brown crepe	58
Prime clean brown crepe	60
Good dark brown crepe	54
Massed or rolled crepe	44
Colombo scrap, No. 1	46
Para:	
Up-river medium	63
Up-river weak fine	56
Up-river coarse	40
Caucho ball	40
Caucho ball, lower	36
Islands fine	59
Islands coarse	27
Cameta	28
Centrals:	
Corinto, prime	39
Esmeralda	39
Central Am. slab	32
Guayule, 20%	35
Africans:	
Red Congo ball	48
Black Congo	50
Benguellas, 32½% shrinkage	29
Massais	55
Rio Nunez	55

Rubber shipped to this country prior to the enactment of the new regulations does not come under the import ban, and is known in the trade as "free" rubber. So as to increase their holdings manufacturers have been active buyers of "free" rubber, and, according to importers, the bulk of this material has already been disposed of at maximum prices. Competition amongst importers to provide manufacturers with their allotments has been keen. Allocation cards have been distributed, but manufacturers took hold of futures rather sparingly.

In many instances importers are holding on to rubber afloat before May 8 with a view to accommodate customers. Manufacturers of rubber goods, who have started operations this year, point out that under the new regulations no provision has been made for supplying them with crude rubber. As matters stand these manufacturers will be forced to operate entirely on "free" rubber, providing sufficient supplies will be forthcoming. Rubber shipped into this country from Mexico, via rail, does not come under the import restrictions.

Singapore reported an easier market and lower prices, but importers expect that these cheap offerings will soon disappear as plantation owners intend to reduce production to the extent of 50 per cent.

Plantation rubber for delivery over the last quarter was unsettled and price shading was in evidence towards the close. The maximum price of 63c for standard pale crepe obtained for spot and nearby material, but for September-November 58c could have been done. Traders in the Brazilian grades were not disposed to shade on futures to any appreciable extent. Demand for Central American descriptions was fairly active on the basis of 39c per pound for prime material. Guayule, basis 20 per cent moisture, has been established at 35c per pound.

	Spot.	June-Aug.	Sept.-Nov.
Para—Up-river fine, lb.	68	67	..
Up-river medium	63	62	..
Up-river coarse	40	39	..
Caucho ball	40	39	..
Islands fine	59	58	..
Islands coarse	27	27	..
Cameta	28	28	..
Maderia fine	70	..	..
Ceylons-smoked sheets, ribbed.	62	62	56
Smokers sheets, plain	60	60	54
First latex pale crepe	63	63	58
Amber crepe	60	60	54
Clean brown crepe	58	58	52
Centrals—Corinto, prime	39	39	..
Esmeralda, prime	39	39	..
Mexican scrap	35	35	..
Balata sheets	88	..	..
Balata, block Panama	59	..	..
Guayule	35	35	..
Africans—Rio Nunez, string	55	..	..
Massai, red	55	..	..
East Indian Pontianak	14½	..	..
Palembang	15	..	..

* Nominal.

Scrap Rubber

New York, May 24, 1918.

The scrap rubber market lacks new features of interest, business being on the hand to mouth order, with prices as heretofore.

The following prices were paid for scrap rubber recently delivered at the reclaiming mill:

Boots and shoes			9
Arctics, trimmed	6¾	@	7
Arctics, untrimmed	5¾	@	6
Tires—automobile	5	@	6
Tres—bicycle, pneumatic	5	@	5¼
Mixed hose	2	@	2¼
Air brake hose	5½		
Inner tubes, No. 1	22¼	@	23¼
Inner tubes, No. 2	11½	@	11¾
Inner tubes, red	11½	@	11¾

Chemicals for the Rubber Trade

States Brand

"MADE IN AMERICA"

APPROX. 17% FREE COLLOIDAL SULPHUR

STATES BRAND RED SULPHURET of ANTIMONY

Use States Brand Sulphuret of Antimony and Thistle Brand Heavy Calcined Magnesia

to produce the best rubber products.

The excellent results obtained from these materials encourage their use in every branch of the rubber manufacture.

produce tubes with utmost heat resisting qualities, long life and numerous selling points

CO-OPERATION and SERVICE have placed Frazar & Co. in the enviable position of being always "A Step in Advance."

SCOTLAND THISTLE BRAND

TRADE MARK

THISTLE BRAND HEAVY and MANHATTAN BRAND LIGHT CALCINED MAGNESIA

We have an intimate knowledge of our PRODUCTS and their FUNCTIONS.

OUR LABORATORY IS CONDUCTED SOLELY FOR THE SERVICE OF THE RUBBER TRADE at LARGE.

WE ARE INTERESTED IN YOUR PROBLEMS and desire to co-operate.

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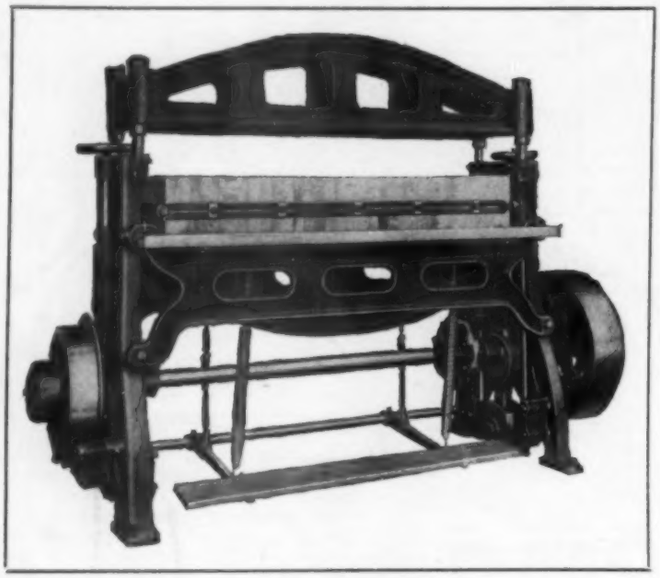
Gearless Sole-Cutting Machines



These machines are of a type that are being used very extensively in the different trades where dies are employed for cutting out parts from Leather, Rubber (cured and uncured), Rubberized Duck, Linings, Friction Cloth and all other materials used in the making of Canvas or Arctic footwear.

They are manufactured in several sizes and styles to meet the various requirements. Their construction is substantial and reliable throughout.

Further particulars and printed matter will be promptly furnished upon request.

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Albany Building *General Department* **BOSTON, MASS.**

F. R. Henderson & Co.

IMPORTERS

Crude Rubber

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